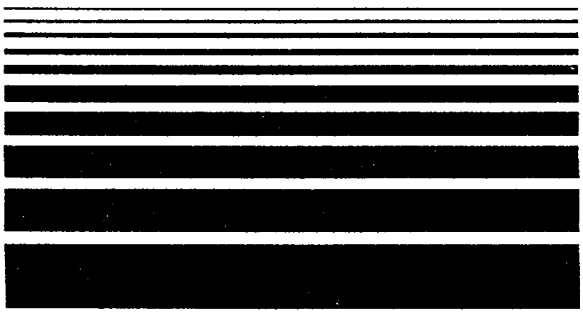
EG-317

HYDRO-TRIAD, LTD

Water Resource Engineers



NATIONAL WESTERN STOCK SHOW
ENVIRONMENTAL ASSESSMENT REVIEW

August, 1990

Prepared by:
HYDRO-TRIAD, LTD

1310 Wadsworth Boulevard, Suite 100
Lakewood, Colorado 80215
Telephone 303/238-6022 FAX 303/238-6382

August 14, 1990

National Western Stock Show Committee
C/O Newcastle Construction Company
114 West 7th Avenue
Denver, Colorado 80204

Attention: Mr. Jack Byrnes

Reference: National Western Stock Show
Environmental Assessment Report Review
National Western Stock Show Additions
Southwest of 47th Avenue and Humboldt Street
Denver, Colorado

Gentlemen:

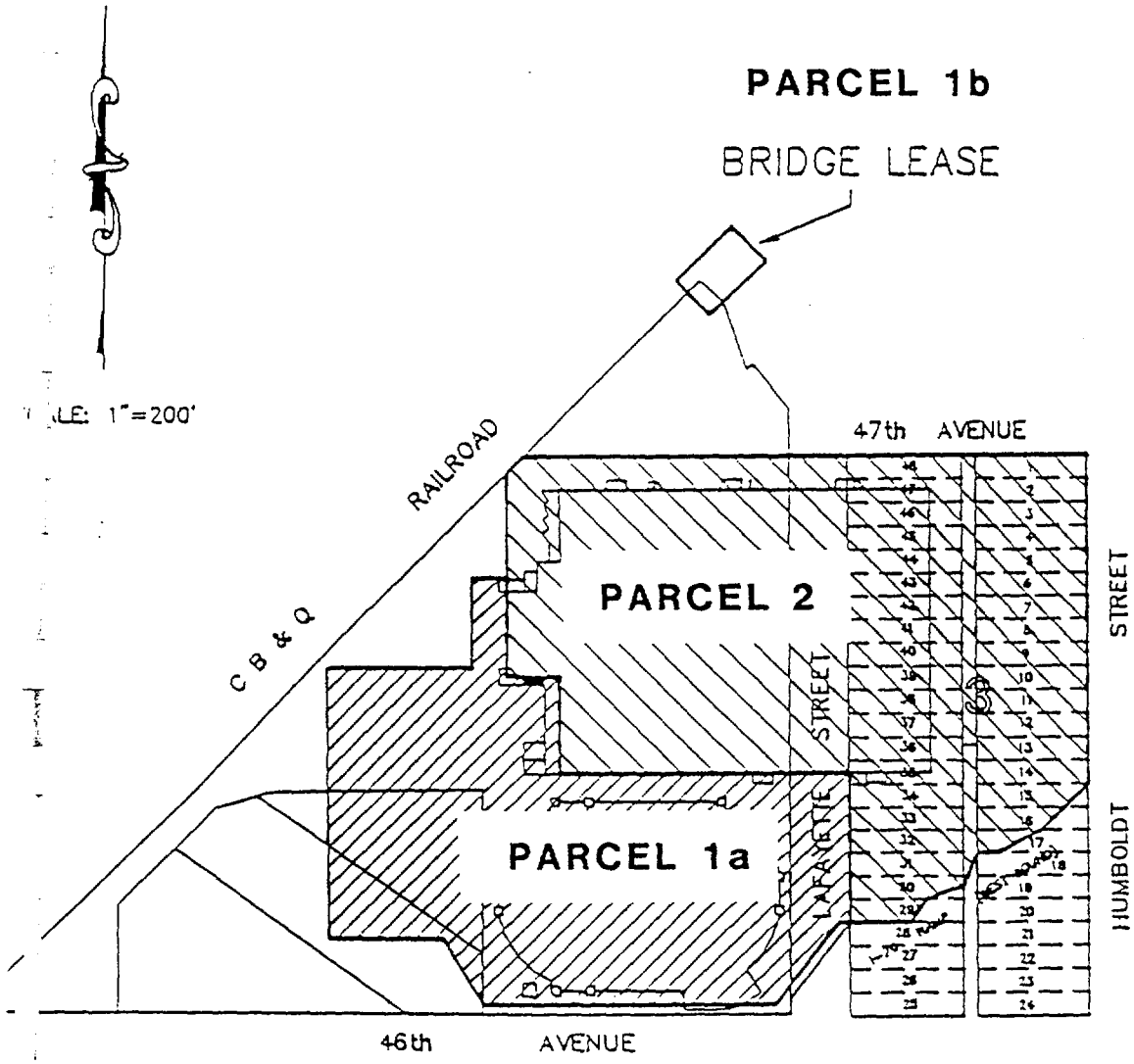
At the request of Risk Management Services, Inc. (RMS), I have reviewed the May 29, 1990 Phase 1 Environmental Audit and the June 13, 1990 Supplemental Information for the above referenced project (Attachment 1). I have also obtained more information where it was needed to confirm some of the assumptions which were made in the initial report.

The location of the site is shown on Figure 1. The subject of this review is limited to the areas identified as Lease Parcel 1a, 1b and Lease Parcel 2. These specific properties are the subject of a lease/sub-lease agreement between the National Western Stock Show Association and the City and County of Denver. Other areas adjacent to Lease Parcels 1a, 1b and 2 are discussed in this report only if conditions on these properties could directly or indirectly impact the subject parcels.

Information obtained by Risk Management Services, Inc. include a letter from the Colorado Department of Health (Attachment 2) stating:

> "Our Underground Storage Tank record, CERCLIS, RCRA, Uranium Mill Tailings Site, Superfund/Remediation, Superfund Amendments and Reauthorization Act (SARA), Section 313 and the Abandoned and Closed Landfill lists were consulted. We have found nothing listed for the above address."

EXHIBIT OF LEASE PROPERTY
THE WESTERN STOCK SHOW ASSOCIATION



TIMBERLINE SURVEYING, INC.
8802 SOUTH BALSAM
LITTLETON CO. 80123
(303) 973-3734

FIGURE 1

Poor Quality Source Document

The following document images have been scanned from the best available source copy.

To view the actual hard copy, contact the Superfund Records Center at 303-312-6473

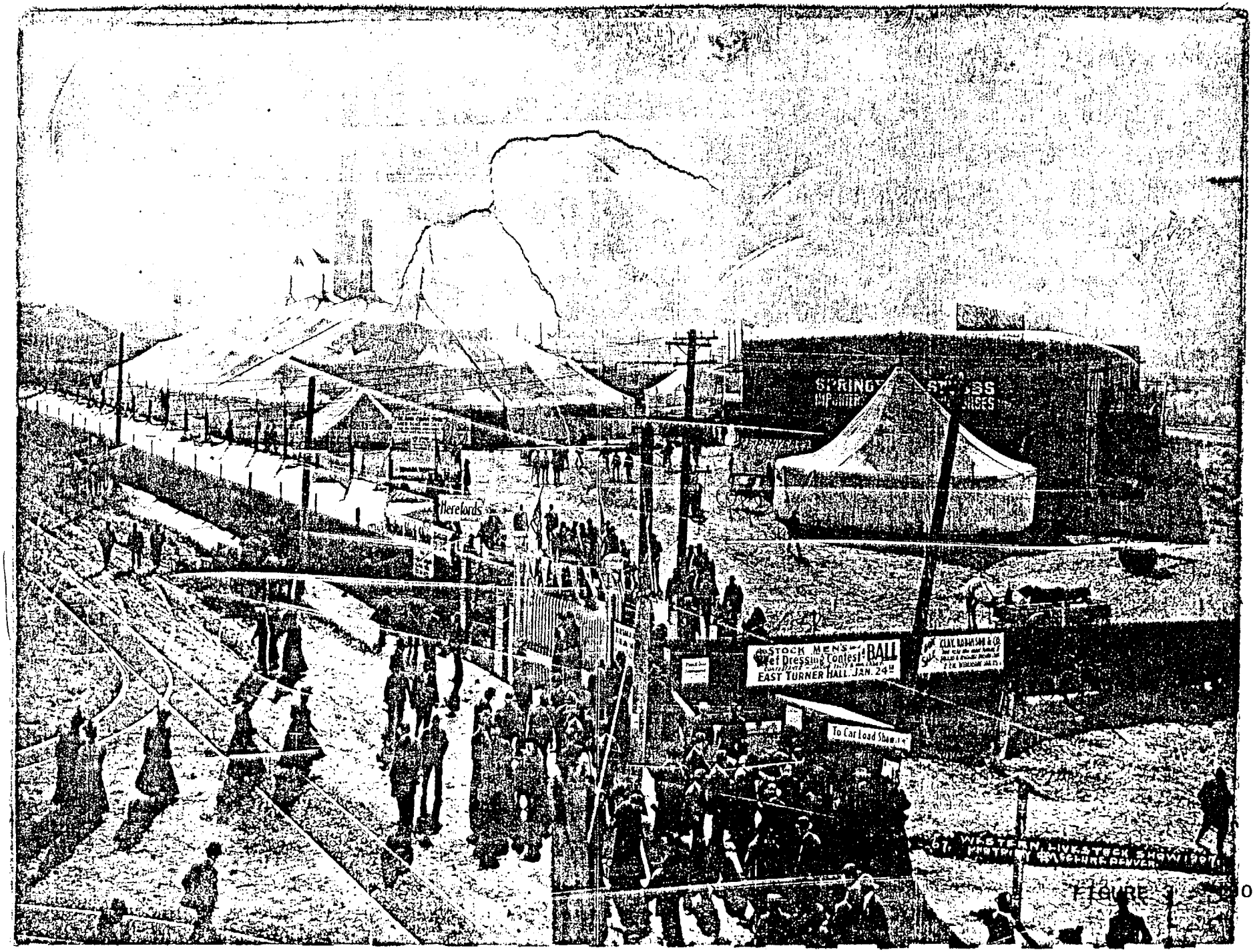


FIGURE 1 - 1907

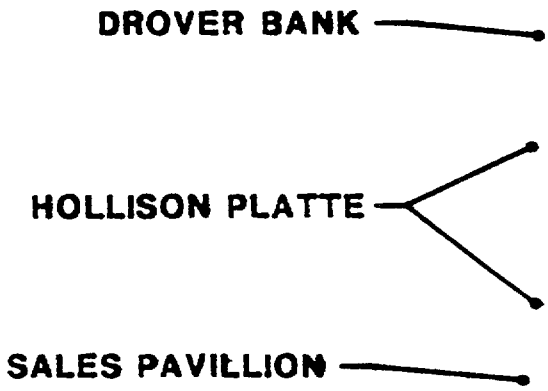

DROVER BANK
HOLLISON PLATTE
SALES PAVILLION

FIGURE 4

SURROUNDING PROPERTY

There are several conditions surrounding Parcels 1a and 2 which were evaluated to determine if there was any adverse effect on the subject parcels. These conditions are shown on the overlay of a 1989 photograph on Figure 5. Those items of concern are former underground storage tanks at previous businesses identified as Jerry's Garage, Yockey Trucking and a service station northeast of the corner of Lafayette Street and 46th Avenue. An additional concern was a small building southwest of the arena in which cattle were sprayed with an insecticide.

Jerry's Garage

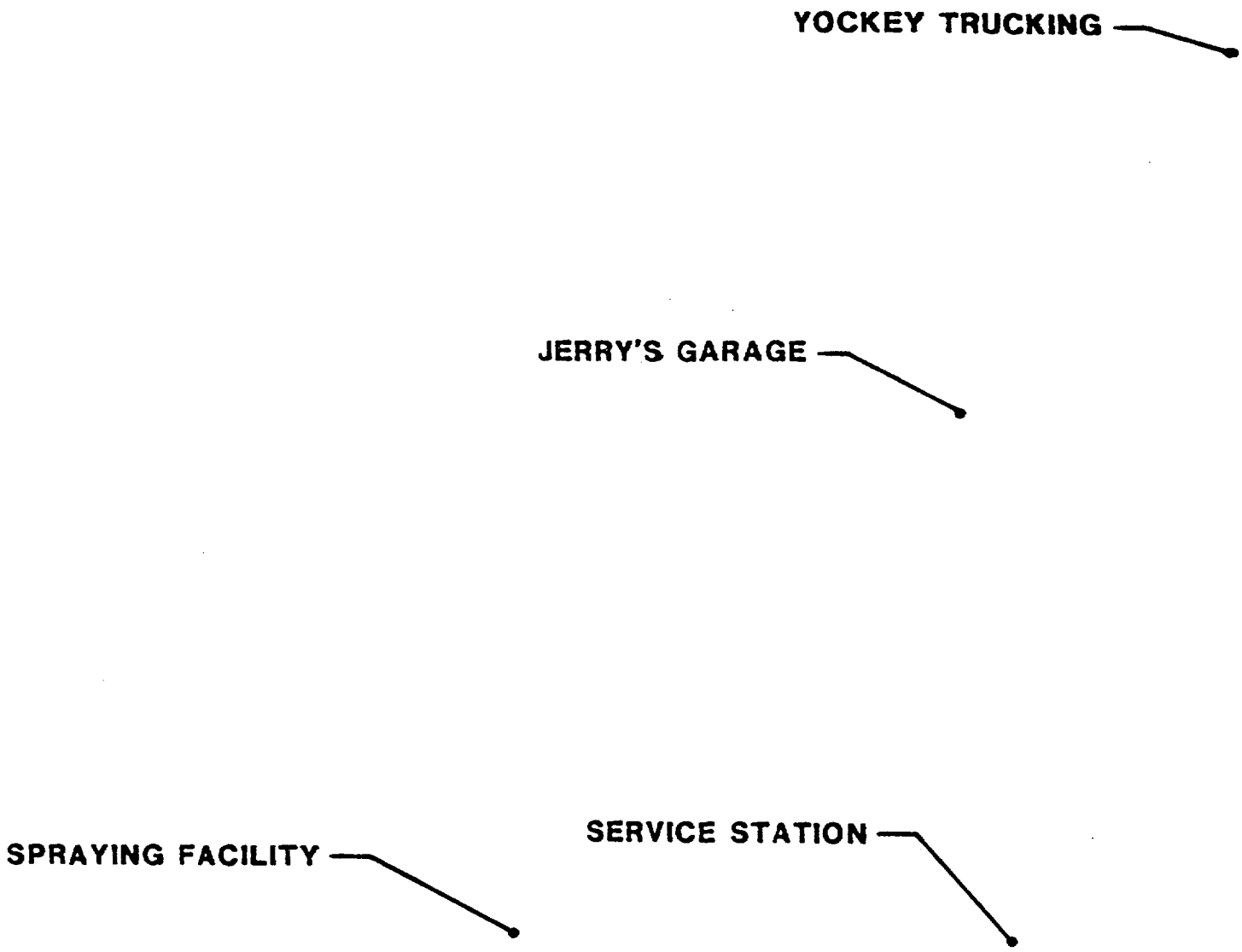
Jerry's Garage was located northeast of the intersection of Lafayette Street and 47th Avenue. Stock Show personnel stated that underground fuel storage tanks had been removed from the property in 1972 (Personal communication between Larry Perry and RMS). According to the contractor who removed the Yockey Trucking underground tanks, the City and County of Denver did not keep records of tank removals at that time.

Jerry's Garage was located directly north of the existing Hall of Education building. If there was significant contamination from the underground storage tanks, it would probably have been discovered during the previous Hall of Education construction activities.

On July 19, 1990, A.G. Wassenaar conducted a drilling and sampling program in the area where the tanks would have been located. The location was determined from analyzing aerial photographs and from Larry Perry's memory of the location of the tanks. Two soil boring were made in this area. The samples from the boring were visually examined and tested with a PID meter (device for detecting volatile organics) with no evidence of volatile organics. The soil samples from the two borings were combined and submitted to a laboratory for analysis.

The results of the soil sampling program are included in the July 27, 1990 A.G. Wassenaar report (Attachment 5). The samples that were analyzed for total recoverable petroleum hydrocarbons (TRPH), benzene, toluene, ethylbenzene, and xylene. The results reported by the laboratory were "not detected" for all of the parameters.

Based on the report that the tanks were removed and the absence of volatile organics measured during the field investigation and the results of the laboratory analysis, it is reasonable to assume that there has been no significant contamination from the Jerry's Garage underground fuel storage tanks.


YOCKEY TRUCKING
JERRY'S GARAGE
SERVICE STATION
SPRAYING FACILITY

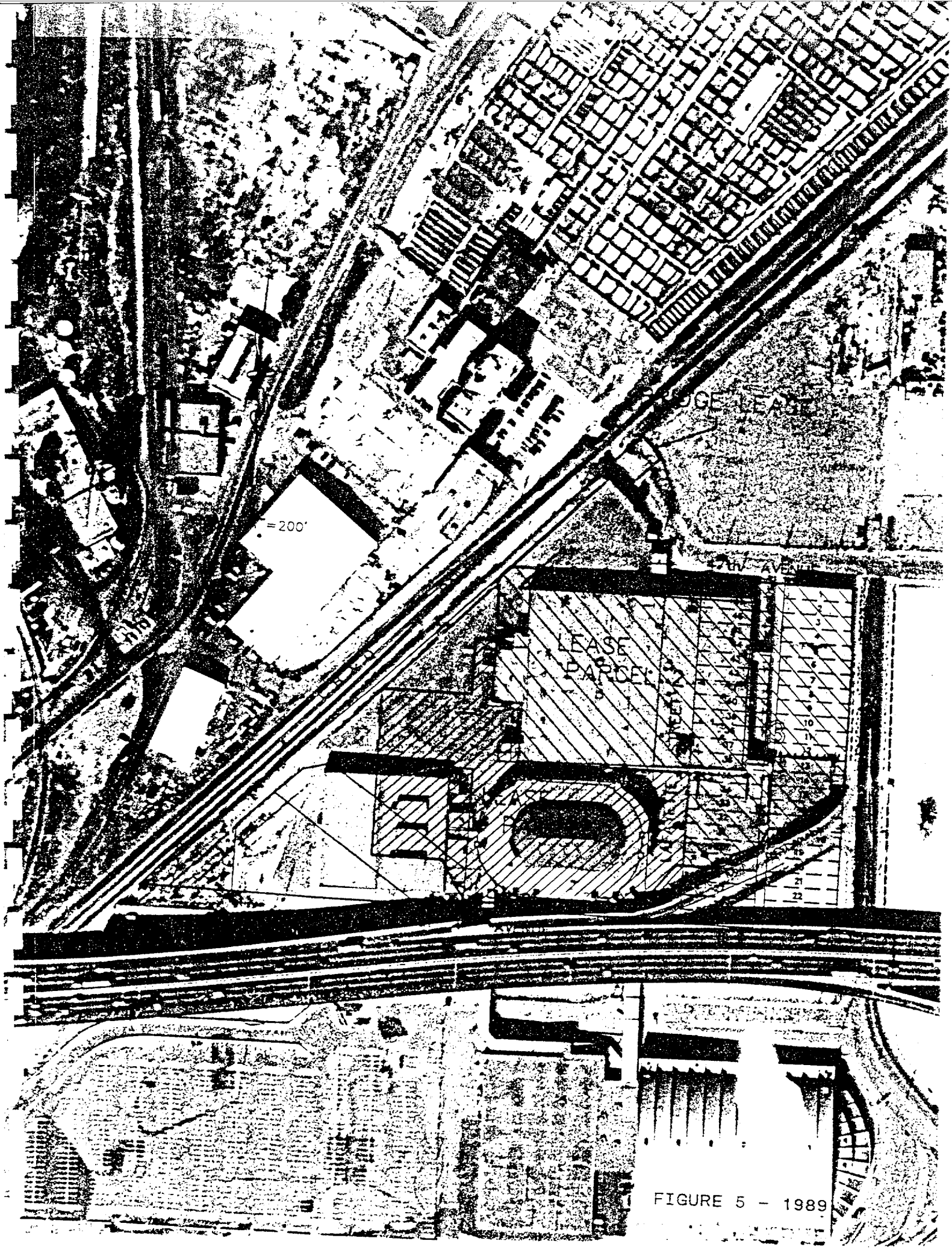


FIGURE 5 - 1989

Yockey Trucking

Yockey Trucking had underground fuel storage tanks which were removed in July, 1990. The City and County of Denver Fire Prevention Bureau inspector noted on the inspection sheet that there was "no visible contamination."

The RMS report stated that there were several drums containing liquid on this site. The tank removal contractor said that the liquid was combined with the free product in the tanks and removed and disposed of offsite by another contractor (personal communication, Curt Crager of Gomez Demolition and Excavating).

On July 19, 1990 A.G. Wassenaar conducted a drilling and sampling program in the location where the tanks were removed. The samples were checked with a PID meter and were found to have no volatile organics which were detectible by the meter. Samples were taken for laboratory analysis.

The results of the laboratory analysis are included in the July 27, 1990 A.G. Wassenaar report (Attachment 6). Benzene, toluene, ethylbenzene and xylene were not detected in the samples. Total recoverable petroleum hydrocarbons were reported to be 26.7 and 64.3 parts per million (ppm) in the two samples. As stated in the report, the Colorado Department of Health has suggested an action level at 100 ppm or greater. Hydro-Triad, Ltd. concurs with the A.G. Wassenaar recommendation that "no further action be taken at this site with regard to soil testing."

Based on the reports from observers of the tank removal and based on the results of the field investigation and laboratory analysis, it is reasonable to conclude that there has been no significant contamination from the underground fuel storage tanks at Yockey Trucking.

Vacated Service Station

As noted on the Figure 4 photograph, there was a service station located on the northeast corner of 46th Avenue and Lafayette Street. As can be shown on the more recent photograph (Figure 5), the service station site has been covered over by the construction of the I-70 westbound entrance ramp. This construction was completed nearly 30 years ago. The Colorado Department of Highways was contacted to determine if records were kept of tank removals during that period. The Department responded by saying that it was possible but not likely that information would be available.

Based on the high probability that the Department removed the tanks because of their construction project and the absence of contamination in the Hall of Education excavation area just to the north of this property, it is reasonable to conclude that there has been no significant contamination from the underground storage tanks on this property.

Cattle and Sheep Spraying Facility

The Colorado State Veterinarian Office supervised a cattle and sheep pesticide spraying operation to the south and west of Parcel 1a. The spraying was done in an enclosed structure which contained collection and recycling equipment for the sprayed material. The animals were kept in the structure for a short time to allow the excess pesticide to run off. The excess would then go to a drain and reservoir system to be used for the next animal.

Dr. Miller of the State Veterinarian Office said the material used for spraying was either Toxaphene or Coumofor. The facility was not operated after the mid 1980's because an injection process was developed which eliminated the need for spraying.

The building in which the spraying was done has been demolished to make room for the new construction. On July 19, 1990 surface soil samples were taken from the area of the building to determine if excess pesticide had contaminated the soil. A composite of soil taken from a depth of one inch at nine locations in an area approximately 20 feet by six feet was submitted to a laboratory for analysis. The coumaphos was undetected in the samples. The concentration of toxaphene was reported to be 0.89 mg/kg (ppm). An EP Toxicity test of the same sample was analyzed with toxaphene being undetected (Attachment 7).

Toxaphene is a pesticide which is almost insoluble in water. It is very soluble in aromatic hydrocarbons which is often the media in which it is applied. Since toxaphene is so insoluble in water, as demonstrated by the absence of toxaphene in the EP Toxicity leaching test, the material will probably not migrate and will therefore not adversely impact Parcels 1a, 1b and 2. The drainage from the cattle and sheep spraying area is toward the south and west, away from the subject parcels.

WETLANDS

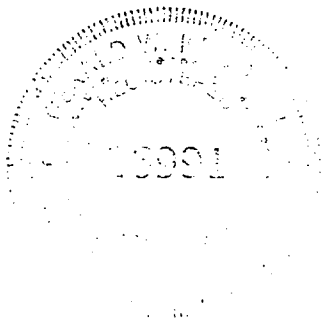
Parcels 1a, 1b and 2 were inspected to determine the presence of wetlands. No wetlands were found.

CONCLUSIONS

The only environmental concern found on Parcels 1a, 1b and 2 was the asbestos identified in the RMS report. RMS concluded that "None of this material is friable and, at this time, presents no danger to the inhabitants. If removal of this material is contemplated or modification may disturb the material, steps should be taken to protect the environment from exposure to asbestos fibers."

The land immediately adjacent to the parcels had past activities which were of concern and which have been further analyzed. The field investigations and laboratory analysis indicates that these activities should not present any significant adverse environmental effect to Parcels 1a, 1b and 2.

Hydro-Triad, Ltd. appreciates the opportunity to assist the National Western Stock Show in this evaluation. If you have any questions or comments, please contact us.



Sincerely,

HYDRO-TRIAD, LTD.

Gerald W. Knudsen, P.E.
Senior Environmental Engineer

GWK:jm
xc: 386-001

CITY AND COUNTY OF DENVER

FEDERICO PEÑA
Mayor

DEPARTMENT OF PUBLIC WORKS

WASTEWATER MANAGEMENT DIV.
2460 W. 26th Avenue, Suite 300C
Denver, Colorado 80211

July 10, 1990

Mr. Amos Ownbey
National Western Stockshow
4701 Marion Street
Denver, Colorado 80216

Dear Mr. Ownbey:

In the matter of the environmental audit for the land to be subleased by your group, we have reviewed the qualifications of Mr. Gerald Knudson, P.E. Further we find that he has the requisite experience to conduct the subject oversight review of the previously conducted environmental audit.

If you have any questions, please contact me at 964-0514 or Mr. Shaun Sullivan at 640-3552.

Sincerely,

E. K. Demos, Ph.D.
Director, Environmental Services

EKD:pb

ATTACHMENT 1

National Western Stock Show
Phase 1 Environmental Audit and Supplemental Information

RMS Risk Management Services, Inc.

June 13, 1990

National Western Stock Show Committee
C/O Newcastle Construction Company
Attention: Mr. Jack Byrnes
1114 West 7th Avenue
Denver, Colorado 80204

Subject: Supplemental Information
Phase 1 Environmental Audit
National Western Stock Show Additions
Southwest of 47th Avenue and Humboldt Street
Denver, Colorado

Gentlemen:

This is a supplement to the Environmental Audit of the Subject Facility dated May 29, 1990, submitted on May 30, 1990.

This supplement is the written report from the Colorado Department of Health, based on a check of the files, indicating that there is no reason to suspect the present of hazardous conditions at this site.

The check included Underground Storage Tank Records, CERCLIS, RCRA, Uranium Tailings Site, Superfund/Remediation, Superfund Amendments and Reauthorization Act (SARA), Section 313, and the Abandoned and Closed Landfill lists.

As a result of this supplemental report, the Environmental Audit prepared by Risk Management Services, Inc.(RMS), is to be considered complete.

RMS hereby declares this site free from environmental hazardous contaminants and/or conditions.

Sincerely,
RISK MANAGEMENT SERVICES, INC.
Marvin H Estes
Marvin H. Estes

MHE/m

cc: Colorado Department of Health Correspondence
Dated: May 31, 1990

3705 Kipling Street, Suite 201, Wheat Ridge, CO 80033 • (303) 422-4542

STATE OF COLORADO

COLORADO DEPARTMENT OF HEALTH

4210 East 11th Avenue
Denver, Colorado 80220-3716
Phone (303) 320-8333

Telefax:
(303) 322-9076 (Main Building/Denver)
(303) 320-1529 (Ptarmigan Place/Denver)
(303) 248-7198 (Grand Junction Regional Office)

Roy Romer
Governor

Thomas M. Vernon, M.D.
Executive Director

May 31, 1990

Linn D. Havelick
Havelick & Associates, Ltd.
11925 Quay Street
Broomfield, Colorado 80020

Re: Environmental Audits

Dear Ms. Havelick:

A file check has been conducted, at your request, on the following address:

1. National Western Stock Show Complex
   1325 East 46th Avenue
   Denver, Colorado 80216

Our Underground Storage Tank records, CERCLIS, RCRA, Uranium Mill Tailings Site, Superfund/Remediation, Superfund Amendments and Reauthorization Act (SARA), Section 313, and the Abandoned and Closed Landfill lists were consulted. We have found nothing listed for the above address. However, our records are not always totally correct, so please use the above information with that in mind. In addition, contact local police, fire and health departments for incident information.

For information on SARA Title III 311 and 312 reports, contact Denver county local emergency planning committee. Lt. Don Saltzman, City & County Bldg, Room 3, Denver, Colorado 80202, 575-2676.

Sincerely,

Barbara Bogema
Administrative Officer
Hazardous Materials and
Waste Management Division

BB:lh:0278

cc: File

STATE OF COLORADO

COLORADO DEPARTMENT OF HEALTH
4210 East 11th Avenue
Denver, Colorado 80220-3716
Phone (303) 320-8333

Telefax:
(303) 322-9076 (Main Building/Denver)
(303) 320-1529 (Ptarmigan Place/Denver)
(303) 248-7198 (Grand Junction Regional Office)

Roy Romer
Governor

Thomas M. Vernon, M.I
Executive Director

June 13, 1990

Marvin H. Estes
Risk Management Services, Inc.
243 Vance Street
Lakewood, Colorado 80226

Re: Environmental Audits

Dear Mr. Estes:

A file check has been conducted, at your request, on the following address:

1. National Western Stock Show
   Between 47th & 48th Avenue
   Denver, Colorado 80216

The following address was located on our RCRA (Resource Conservation and Recovery Act) list:

1. Mid America Plating Inc.
   4877 Packing House Rd
   Denver, Colorado 80216
   Generator

2. Southwind Development Company
   4877 Packing House Rd
   Denver, Colorado 80216
   Generator

We have one file on Mid America and Southwind Development. If you would like to review the file, please send a written request with the file name and the date you wish to review the file to Debbie Casias (ATTN: Open Records Request) at the above address.

The following address was located on our Underground Storage Tank list:

1. The Western Stock Show Assc
   4770 Humbolt Street
   Denver, Colorado 80216

2. National Western Stock Show
   4732 Franklin Street
   Denver, Colorado 80216

   Tank 1 has diesel permanently out of use
   Tank 2 has gasoline permanently out of use

Our Leaking Underground Storage Tank records, CERCLIS, RCRA, Uranium Mill Tailings Site, Superfund/Remediation, Superfund Amendments and Reauthorization Act (SARA), Section 313, and the Abandoned and Closed Landfill lists were consulted. We have found nothing listed for the above address. However, our records are not always totally correct, so please use the above information with that in mind. In addition, contact local police, fire and health departments for incident information.

For information on SARA Title III 311 and 312 reports, contact Denver county local emergency planning committee. Lt. Don Saltzman, City & County Bldg, Room 3, Denver, Colorado 80202, 575-2676.

The above information is the best available to the Division at this time. The Division cannot guarantee that an environmental incident has not occurred on or near the site.

Sincerely,

Barbara Bogema

Barbara Bogema
Administrative Officer
Hazardous Materials and
Waste Management Division

BB:lh:0278

cc: File

RMS Risk Management Services, Inc.

NATIONAL WESTERN STOCK SHOW COMPLEX ADDITIONS
SOUTHWEST OF 47TH AVENUE AND HUMBOLDT STREET

PHASE 1 ENVIRONMENTAL AUDIT

Report Date: May 29, 1990

PREPARED FOR:
National Western Stock Show Committee
C/O Newcastle Construction Company
Attention: Mr. Jack Byrnes
1114 West 7th Avenue
Denver, Colorado 80204

3705 Kipling Street, Suite 201, Wheat Ridge, CO 80033 • (303) 422-4542

RMS Risk Management Services, Inc.

May 29, 1990

National Western Stock Show Committee
C/O Newcastle Construction Company
Attention: Mr. Jack Byrnes
1114 West 7th Avenue
Denver, Colorado 80204

Subject: Phase 1 Environmental Audit
National Western Stock Show Additions
Southwest of 47th Avenue and Humboldt Street
Denver, Colorado

Gentlemen:

The following is the preliminary report on the Environmental Audit conducted by Risk Management Services, Inc. (RMS). Risk Management Services enlisted the services of Mr. Lynn Havelick, CIH, to assist with this environmental audit.

The need for the audit is in response to demolition and construction activities associated with renovation of portions of the complex. The area considered for this environmental audit has as its boundaries, the Burlington Railroad tracks on the west, the I-70 freeway on the south, Humboldt Street on the east and ~~46th~~ 47th Avenue on the north. The description of the construction work to be performed is "Improvements to the National Western Stock Show Complex, Phase 1, Concourses/Hall of Education Expansion."

The Audit performed is considered Phase 1 and was non-intrusive and non-destructive and consisted of the following activities:

1. Project Site Visits.
2. Agency Contacts.
3. Review of Hazardous Site Records.
4. Review of Property Records.
5. Preparation of Final Reports.

Because some of the written reports from some agencies have not yet been received and, therefore, cannot be incorporated in this report, this document will be considered preliminary until such time as all material is available to comprise the final report.

The conclusion reached by Risk Management Services, Inc., is that there is no evidence of any environmental concerns on this Phase No. 1 site which will impact current construction activities.

SITE HISTORY

The history of the usage of the site has been carefully chronicled since 1906 when the newly formed Western Stock Shop Association agreed to ask the Denver Union Stock Yard Company to "build a pavilion to seat 10,000 people, with a judging ring about 90 feet by 180 feet." For the site it favored a sizeable piece of land owned by Denver Union, a weedy hill across the Burlington railroad tracks from the location of the first show in 1906.

The first building, erected on the site in late 1906, was a two-story brick horse barn which would serve as a year-around horse market. The top floor was used to house sheep and hogs with the horses on the first floor during the second stock show in 1907. Instead of the pavilion, a "monster big tent", measuring 150 by 175 feet, manufactured by Schaefer Tent and Awning Company of Denver was erected on the site.

Other structures were built on the site in following years to serve the Association and there is no evidence that the buildings themselves, their usage and the usage of the site introduced any substances that can be considered toxic.

The Association has acquired additional property adjacent to the original site including the Drovers Building, Bank, Hollis & Platte land and building, Ward Hotel and Jerry's Garage. The area south of the Hollis & Platte cattle barn that was to be the location of the Lamont Pavilion, an auction building. Several other buildings have been erected and replaced on the property between former Lafayette Street on the east, the Burlington Railroad tracks on the west, and 46th Avenue on the South.

In 1972 several buildings between Lafayette and Humboldt Streets to the east were demolished for construction of a Hall of Education, a Beef Palace and a Horse Center. The buildings demolished included the Hollis and Platte Barn, a gasoline

service station at the corner of Lafayette and 46th Avenue, Jerry's Garage, a two-story horse barn, the Lamont Pavilion, and two office buildings. Jerry's Garage apparently had three underground storage tanks which, according to Larry Perry of the National Western Stock Show, were removed from the site at the time of the demolition. Mr. Perry did not have any specific recollection of whether any tanks were removed from the site of the service station at 46th and Lafayette. However, due to the construction of the freeway ramp over that site, it is unlikely that any tanks remain from that service station. It is our understanding that current construction activities will not impact soils to the east of Humboldt Street. Thus the current construction is not likely to be involved with underground storage tank problems.

ADJOINING PROPERTIES

Properties adjoining the National Western Stock Show site include residential, railroad right-of-way, an abandoned trucking company, meat-packing operations, freeway, the Denver Coliseum, and office buildings.

The properties directly to the east of the Nation Western Stock Show site are residential in nature and should not pose any environmental threats.

Northeast of the site is the former Yockey Trucking Company. The Yockey property is currently unoccupied and is scheduled for demolition. The property has visible signs of hydrocarbon contamination, several existing underground storage tanks, 10-12 empty drums and at least one drum full of unknown liquids, and has an obvious spill of a white salt-like material at the Northern boundary. This spill covers an approximate area of 8'x20'x1' high and the exact composition of the salt is unknown. In a conversation between Dewayne Cahill, Manager of Bar S Foods, and Marvin Estes, RMS, he admitted, that, in all probability, the material came from that plant, and Dewayne made an offer to have it picked up upon request.

The Yockey site does not appear to impact current construction activities. (A soil survey of the current site shows no detectable hydrocarbons.) However, any future work in the vicinity of the Yockey site should include further

investigation of contamination at the site.

The Bar S Foods is located to the northeast. No obvious hazards were noted due to the proximity of this plant.

The western boundary of the site is formed by the Burlington Railroad tracks. Across the tracks are the office buildings of the Denver Union Stockyard Company, livestock pens, the Denver Hardwood Company and the General Building Materials Company (both are lumber and building materials supply firms), and the Pepcol Manufacturing Company, a meat byproducts processing company. None of these operations were seen to present significant environmental hazards to the current construction activities.

The southern boundary of the sire is formed by the Interstate 70 freeway and the Denver Coliseum. Neither of these appear to present any significant hazards.

PROXIMITY TO HAZARDOUS SITES

Several sites on the EPA CERCLIS (a comprehensive EPA listing of sites where environmental contamination has occurred) are located within an approximate one mile radius of the National Western Stock Show. However, none of these sites are also on the EPA National Priorities List of serious hazardous waste sites. The sites on the CERCLIS include the following:

American Furniture Warehouse
50th & Broadway

Asarco, Inc.
Globeville Plant
495 East 51st Avenue

ESB Inc.
4120 York

Old Landfill Site
46th and Brighton Road

48 TH

Texaco USA
805 West 38th Avenue

Of these sites, the Old Landfill site at 48th and Brighton Road has the greatest potential for impact on the National Western Stock Show site. The current construction activity is outside the 1,000 foot "Hazardous Distance Area" as defined by the map prepared by the Denver Planning office. However, future construction east of Humboldt Street would be within the 1,000 foot boundary. Prior to construction or excavation in that area testing should be performed to determine the presence or absence of hazardous gases or wastes in the soils.

The other nearby sites on the CERCLIS do not appear to pose significant hazards for the type of land use and construction proposed.

We have not yet received a reply from the Colorado Department of Health regarding their check of hazardous sites.

HAZARDOUS MATERIALS USED ON THE PROPERTY

Interviews of National Western Stock Show employees and associates by Marvin Estes found no indication of use of hazardous materials on the site. No environmental permits or licenses are held by National Western Stock Show. Mr Perry indicated that in the past, when pesticides such as sheep dip were used at the site, the excess pesticides were disposed of off-site. Mr. Perry did not specify a specific location. Mr. Amos Owenby disclosed that he had submitted the required registration forms to the EPA on the underground storage tanks at the Yockey site.

A contact with the Denver Fire Department, Fire Station No. 9 did not reveal any calls made by the department over the past 35 years to deal with hazardous fires or chemical spills other than to extinguish a few minor blazes caused by straw being set afire.

EXISTING SOILS REPORT

An existing soils report indicates that no organic compounds were found in soil samples taken from the site. A copy of the report is attached.

UNDERGROUND STORAGE TANKS

We have not yet received a reply from the Colorado Department of Health regarding their check of listing of underground storage tanks at the site. Our interviews indicated that underground storage tanks did exist at the locations of Jerry's Garage and the 46th and Lafayette service station. According to Mr. Perry of the National Western Stock Show, the tanks at Jerry's Garage have been removed. The tanks at the service station were likely removed during construction of the freeway ramp at that location. Any deep excavation at that site should be preceded by a survey with a metal detector to determine the presence or absence of any underground tanks. Prior to construction at that location, the specific tank locations should be verified and testing performed to detect leaks from the tanks.

CONCLUSIONS

Current construction at the National Western Stock Show site should be allowed to continue without further environmental testings or review. Additional information obtained from regulatory agencies has the potential to change this conclusion prior to issuance to the final report on this project. Future construction activities to the east of Humboldt Street should be preceded by a Phase II environmental sampling and investigation to identify the extent and locations of environmental hazards in that area.

If you have any questions regarding this report, please feel free to contact me at any time.

Sincerely,
RISK MANAGEMENT SERVICES, INC.

Marvin H Estes

Marvin H. Estes

MHE/me
Attachment: Soils Report

RMS

A. G. WASSENAAR, INC. GEOTECHNICAL CONSULTANTS
PHONE: 303/759-8100 FAX: 756-2920 2180 S. IVANHOE, SUITE 5 DENVER, COLORADO 80222

SOIL AND FOUNDATION STUDY FOR

NATIONAL WESTERN STOCK SHOW
ADDITIONS
SOUTHWEST OF 47TH AVENUE
AND HUMBOLT STREET
DENVER, COLORADO

PREPARED FOR

NATIONAL WESTERN STOCK SHOW
COMMITTEE
C/O MR. JACK BYRNES
1114 WEST 7TH AVENUE
DENVER, COLORADO 80204

JANUARY 31, 1990
PROJECT NUMBER 10842

A. G. WASSENAAR, INC. GEOTECHNICAL CONSULTANTS
PHONE: 303/759-8100 FAX: 756-2920 2180 S. IVANHOE, SUITE 5 DENVER, COLORADO 80222

January 31, 1990

National Western Stock Show Committee
c/o Mr. Jack Byrnes
1114 West 7th Avenue
Denver, Colorado 80204

Subject: Soil and Foundation Study
National Western Stock Show Additions
Southwest of 47th Avenue and Humbolt Street
Denver, Colorado
Project No. 10842

Gentlemen:

As requested, we have conducted the soil and foundation study for the proposed structure additions at the subject site. Our summary of the data collected during our field and laboratory work and our analysis, opinions and conclusions are presented in the attached report. The purpose of our study is to provide design criteria for planning, site development, foundation systems, slabs-on-grade and drainage for the proposed additions.

In general, the subsoil and bedrock conditions encountered across this site are somewhat uniform. Depths of existing fill and thickness of the loose to dense sand and gravel mixtures vary. These sand and gravel mixtures become more dense and granular with depth. The underlying claystone bedrock is very hard and was encountered at an approximate elevation of 5134.5 to 5137.5. Water levels were difficult to detect because hollow stem augers were required to case deeper borings in order to maintain hole integrity for sampling. However, it appears the existing water level is 5 to 15 feet above the bedrock at an approximate elevation varying from 5142 to 5153. It should be noted that additional depths of unsuitable fill may be encountered within foundation backfill zones placed for the existing structures. No expansive soils or soil contamination was noted.

It is our understanding structures will be founded on straight-shaft piers because of loading and construction constraints. A footing alternative has also been provided.

Slabs-on-grade will require special subgrade preparation because of existing fill and areas of loose soil.

Perimeter subdrains are not required for at-grade construction. However, we have recommended an exterior perimeter drain for below grade areas (i.e., the Hall of Education addition).

Additional recommendations are presented in the following report.

An environmental assessment is not included as part of this study. If hydrocarbon or other contamination is observed during construction, additional environmental studies may be required. No such contamination was observed during this study.

If you have any questions regarding the contents of this report or our analyses of the subsurface conditions which will influence the proposed construction, do not hesitate to call our office. We have appreciated the opportunity to provide this service for you.

Sincerely,

A. G. WASSENAAR, INC.

Donald L. Taylor, Jr., P. E.
Vice President

Allen G. Wassenaar, P. E.
President

DLT/AGW/lml

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Soil and Foundation Study
National Western Stock Show Additions
Southwest of 47th Avenue and Humbolt Street
Denver, Colorado
January 31, 1990

PURPOSE

This report presents results of a soil and foundation study for the proposed Concourse and Hall Of Education additions to be located at the subject site. The study was made to assist in determining design criteria for planning, site development, foundation systems, slabs-on-grade and drainage. Factual data gathered during the field and laboratory work is summarized on Figures 1 through 15 and Table I attached. Our opinions and recommendations presented in this report are based on the data generated during this field exploration, laboratory testing, and our experience with similar type projects.

PROPOSED CONSTRUCTION

We understand the proposed Concourse addition will include a two-story, steel superstructure with slab-on-grade construction. No below grade areas are planned. The Hall of Education addition will be three stories with the first level partially below grade. Construction materials, as planned, will consist of precast concrete and steel. We do not anticipate foundation loading to be unusual for this type and height of construction. It is our understanding total load conditions vary from 13 to 20 kips per lineal foot, and column loads vary from 230 to 776 kips. The locations of our test borings are shown on Figure 1 and our assumed floor levels are shown on Figures 2 through 6. If the actual floor levels vary by more than two feet from that shown, we should be notified and the recommendations of this report reviewed.

SITE CONDITIONS

The site for the Concourse addition is partially vacant and is located adjacent to the

existing stadium and south and west of the Hall of Education. The southwest portion of this addition is presently occupied by another building which is to be removed. Topographically the site slopes gently to the west.

The Hall of Education addition is located east of the existing structure. A majority of the site for the Hall of Education addition is presently vacant and used as a parking/storage area. An existing metal building is located at the northeast corner of the site. The grade in this area is to be lowered to match the existing lower level slab-on-grade. The topography is relatively flat in this area with the exception of the approximate 9.5 feet lower level access way adjacent to the existing structure.

FIELD EXPLORATIONS

Subsurface conditions were explored by drilling eighteen (18) test borings at the locations indicated on Figure 1. The borings were advanced using both a 4-inch diameter, continuous flight auger and a 6-inch hollow stem auger. Both drilling tools were powered by a CME 55 drilling rig. At frequent intervals, samples of the subsoils were taken using a California sampler which is driven into the soil by dropping a 140-pound hammer through a free fall of 30 inches. The California sampler is a 2.5-inch outside diameter by 2-inch inside diameter device. The number of blows required to drive the sampler into the soils is known as a penetration test. The number of blows required for the sampler to penetrate 12 inches gives an indication of the consistency or relative density of the soils encountered. Results of the penetration tests and locations of sampling are presented on the Logs of Exploratory Borings, Figures 2 through 6.

SUBSURFACE CONDITIONS

In general, the subsoil and bedrock conditions encountered across this site are somewhat uniform. Depths of existing fill and thickness of the loose to dense sand and gravel

mixtures vary. These sand and gravel mixtures become more dense and granular with depth. The underlying claystone bedrock is very hard and was encountered at an approximate elevation of 5134.5 to 5137.5. Water levels were difficult to detect because hollow stem augers were required to case deeper borings in order to maintain hole integrity for sampling. However, it appears the existing water level is 5 to 15 feet above the bedrock at an approximate elevation varying from 5142 to 5153. It should be noted that additional depths of unsuitable fill may be encountered within foundation backfill zones placed for the existing structures. No expansive soils or soil contamination was noted.

Hall of Education Addition

Our test borings indicate the subsurface conditions encountered consist of approximately zero to one foot of pavement (asphalt and base course combined) overlying 1.7 to 7.0 feet of loose to compact, silty to clayey to gravelly sand fill. The upper portion of the fill encountered in Test Boring No. 6 contained some organics and wood chips. Approximately zero to 10.0 feet of natural, loose to medium dense, silty to clayey sands and gravel overlying dense, silty to cobbly sands and gravels were encountered underlying the existing fill. Vary hard claystone bedrock was encountered at depths ranging from 34.5 to 47.5, or elevations ranging from 5134.5 to 5136. Ground water was noted 5 to 15 feet above the bedrock. All test borings would have caved except for the use of hollow stem auger casing.

Concourse Addition

Our test borings indicate that the subsurface conditions consist of approximately 0.5 to 0.8 feet of pavement (asphalt and base course combined) overlying 0.6 to 5.2 feet of loose to compact, silty to clayey to gravelly sand fill. The natural soils underlying the fill consist of zero to 11.0 feet of loose to medium dense, silty to clayey sand and gravel mixtures overlying dense, silty to cobbly sands and gravels. Very hard claystone bedrock

was encountered underlying sands and gravels at depths ranging from 30.5 to 41.0 feet, or elevations ranging from 5136 to 5137.5. Ground water was observed 5 to 15 feet above the bedrock. Ground water elevations are estimated to range between 5142 to 5153. All test borings would have caved it left open. However, borings were cased during drilling with hollow stem auger.

Refer to the Logs of Exploratory Borings, Figures 2 through 6, for a more complete description of subsurface conditions.

LABORATORY TESTING

Samples were returned to the laboratory where they were visually classified and testing assigned to specific samples to evaluate their engineering properties. The laboratory tests included fifteen (15) gradation analysis tests and three (3) Atterberg limits tests to evaluate grain size distribution and plasticity. These results are presented on Figures 7 through 12. Six (6) settlement-swell tests were also conducted to evaluate the effect of wetting and loading on the selected bedrock samples. The results of the settlement-swell tests are presented on Figures 13, 14, and 15. In addition, four (4) unconfined compressive strength tests were conducted on selected bedrock samples. The results of the strength testing are summarized, along with the other laboratory test results, on Table I attached.

A majority of the laboratory test results are also depicted on the "Logs of Exploratory Borings". It should be noted that gradation results are sometimes influenced by sample size collected.

FOUNDATION RECOMMENDATIONS

The proposed additions may be founded on straight-shaft piers designed for an end

bearing pressure of 50,000 pounds per square foot with a side shear of 5,000 pounds per square foot for that portion of the pier in competent bedrock. No side shear should be used within the upper five feet of each pier, beginning below final grade elevation. In addition, no side shear should be used for any portion of the pier which is cased and/or penetrates the natural soil or man-made fill. The following design criteria should also be observed:

a) A minimum dead load pressure of 10,000 pounds per square foot based on pier cross-sectional area should be used. Where minimum dead loads can not be attained, minimum pier penetrations should be increased using 75 percent of the side shear value given above.

b) Piers should be drilled at least six feet or three pier diameters, whichever is greater, into the competent bedrock zone.

c) Piers should be reinforced their full length to resist tension forces. A minimum steel area of 0.005 times the pier cross-sectional area is recommended.

d) A four-inch minimum air space should be provided beneath the grade beams between the piers for effective concentration of loads on the piers.

e) To permit cleaning of each pier hole prior to placement of concrete, casing of the pier holes will be necessary because of ground water conditions and caving soils. Concrete should not be placed in more than three inches of water.

f) Zones of caving material and/or casing should not be included when determining required bedrock penetrations. Bedrock should be increased an amount equal to the length of casing within the bedrock zone.

g) Concrete for each pier should be formed at the top

necessary, to maintain a uniform diameter at the top of the pier.

h) Difficult drilling may be encountered in the very hard bedrock. Pier penetration may be decreased after a review of the design criteria and adequacy of the drilling equipment is conducted by the Structural and Soil Engineers.

i) Pier drilling should be observed by a representative of this office to identify the bearing strata, to confirm the subsurface conditions are as anticipated from our exploratory borings, and to assess construction.

Settlement of the existing structures has probably already occurred. Settlement of the proposed additions supported by piers should be minimal; however, we recommend construction details allow for some movement between the existing structures and the additions.

An acceptable alternate foundation system for the additions would be conventional spread footings or pad-type footings placed directly on the natural undisturbed soils or on controlled structural fill below frost depth and below any existing fill or loose materials. Footings bearing on structural fill or the medium dense sands and gravels should be designed for a soil bearing pressure not to exceed 4,000 pounds per square foot. Footings bearing upon the underlying dense sands and gravels should be designed for a soil bearing pressure not to exceed 6,000 pounds per square foot. The bearing elevations for the 6,000 psf design value can be assumed at an elevation of 5168 in the Hall of Education addition area and 5162 in the Concourse addition area. The following design criteria should also be observed:

a) Footings should be proportioned such that subgrade loading conditions are nearly uniform. This will minimize the potential for differential settlement. If pads on footings exceed 6 feet, additional settlement

calculations will be required prior to implementation of design.

b) Continuous concrete foundation walls should be adequately reinforced top and bottom.

c) All disturbed or loose soils or man-made fill encountered beneath footings should be removed and replaced with properly compacted structural fill prior to placement of concrete.

d) Excavations for the new additions should not undermine the existing foundation system. We recommend new excavations not intersect a line drawn on a 45 degree angle down and away from the bottom edge of the existing foundation system.

e) We should be called to observe all footing excavations prior to concrete placement.

The proposed additions will be adjacent to existing structures. There is more of a possibility of differential settlement with footings supported on the subsoils, especially when the original structure has existed for years. We recommend the structural details allow for at least one-half inch differential movement between the existing structures and the spread footing supported additions.

LATERALLY LOADED PIERS AND PIER GROUPS

It is our understanding piers and/or foundation elements may be subject to lateral loading. Such piers should be designed using a uniform modulus of horizontal subgrade reaction equal to 50 tons per cubic foot (tcf) in the natural, loose to medium dense sands and gravels above elevation 5162 in the Concourse addition area and above elevation 5168 in the Hall of Education addition area. A value of 100 tcf may be used for the underlying dense sands and gravels. That portion of the piers extending into the bedrock may be designed using a uniform modulus of horizontal subgrade reaction equal to 300

tcf. The lateral loading resistance should be neglected to a depth of 1.5 pier diameters below the ground surface. The modulus values provided above are for a one foot wide pier and must be corrected for pier size. This reduction factor can be determined by dividing the modulus by the actual pier diameter in feet. In addition, an effective pier diameter of 0.8 should also be incorporated into the lateral resistance design.

The minimum recommended center to center spacing of piers is two times the average pier diameter. Piers spaced less than three pier diameters apart will require the application of an efficiency reduction factor and should be analyzed on a case by case basis. No reduction in axial or horizontal subgrade reaction is required for piers greater than three pier diameters (center to center) apart. Piers should be spaced as far apart as practical.

LATERAL EARTH PRESSURES

Lateral pressures on walls depend on such factors as the type of wall, hydrostatic pressure behind the wall, type and slope of backfill material, degree of backfill compaction, allowable wall movements, and surcharge loading conditions. We recommend hydrostatic pressures be minimized by placing a perimeter drain system at the wall base. Where anticipated wall movements are less than approximately 0.5 percent of the wall height or wall movement is constrained, lateral earth pressures should be estimated for an "at rest" condition. Where anticipated wall movements are greater than 0.5 percent of the wall height, lateral earth pressures should be estimated for an "active" condition. Walls backfilled with on-site sands and gravels should be designed for an equivalent fluid lateral earth pressure of 60 pcf for the "at rest" condition and 45 pcf for the "active" condition. We recommend a coefficient of sliding resistance between the concrete and bearing soils of 0.50 be assumed in your analysis. These values have been computed without consideration for sloping backfill, surcharge loading, or hydrostatic pressures. If any of these conditions are anticipated, we are available to assist you in revising these values.

FLOOR SLABS AND EXTERIOR CONCRETE

The existing man-made fill covering the site has been placed some time in the past. Some settlement of the fill has been completed; however, additional movement may occur after the new construction has been completed. To minimize settlement of the slabs-on-grade, all the existing fill as well as any loose sands and gravels should be removed. Acceptable existing fill material or a suitable off-site material should be placed in eight-inch loose lifts, within 3 percent of optimum moisture content and compacted to a minimum 95 percent of modified Proctor density (ASTM D 1557). A suggested guide specification for placement and compaction of fill is attached.

If the Owner wishes to accept the risk of slab movement without complete over-excavation of man-made fill materials and loose soils, we recommend a minimum of three feet of material be removed and replaced with structural fill. The excavated surface should then be proof-rolled and soft or unstable areas stabilized. Prior to slab placement, the exposed subgrade should be scarified a minimum of 8 inches and recompacted as specified above. A final proof-roll of the subgrade should be conducted to delineate any remaining loose areas requiring redensification.

Construction joints should be provided as recommended by the American Concrete Institute. Slabs placed on the existing fill should be separated from bearing members and utilities and be free to move. The Owner should anticipate differential slab-on-grade movement and cracking. Where forklift or similar traffic is anticipated, a joint capable of providing load transfer should be installed.

SURFACE DRAINAGE

The following drainage recommendations should be followed during construction and maintained at all times after the additions have been completed:

a) Backfill around the exterior foundation walls in non-structural areas should be moistened and compacted to at least 90 percent of modified Proctor density according to ASTM D 1557.

b) The ground surface around the perimeter foundation walls should be sloped to drain away from the structures in all directions. Where practical, we recommend a slope of 6 inches in the first ten feet.

c) Watering adjacent to structures should be minimized as much as practical.

d) Roof downspouts and other water collection systems should discharge well beyond the limits of the backfill. Precipitation runoff should be appropriately maintained away from the structures.

e) Other usual precautions which may be indicated during design and construction.

SUBSURFACE DRAINAGE

Present ground water conditions, in our opinion, should not be a problem for the proposed structure additions. We believe if the ground surface and roof drainage are properly cared for, no subdrains should be necessary except in below grade areas such as portions of the Hall of Education addition. In these areas we recommend an exterior perimeter subsurface drainage system which should be uniformly sloped to drain to a dry sump located in the basement area or to gravity discharge. A pump may be installed if water becomes a problem. The perimeter subsurface drainage system should consist of perforated or open joint tile, or equivalent flexible plastic pipe placed around the basement area at least 6 inches below the basement floor slab in an envelope of free-draining gravel. Refer to Figure 16 for a typical drain detail for additional construction information.

SITE DEVELOPMENT

Site Grading

The grading plans have not yet been finalized; however, we assume that the fill materials used at the site will be from on-site cut areas. In addition, we assume the major cut areas will be located along the Hall of Education addition to the east, with the major fill areas being located along the western portion of the Concourse addition site.

Based upon these assumptions, the soil used for filling operations should consist of silty to clayey sands and gravels. In addition, existing fill soils were noted in these areas. Based upon our observation, a majority of the existing fill should be reusable. However, some selective cut and fill operations may be required. This is especially important in areas where existing structures will be removed. All deleterious materials in these areas or any other such areas should be completely removed and replaced with structural fill. A majority of these soils exhibited low in-situ moisture contents and will most likely require additional water to obtain the specified compaction. In addition, the shrink-swell characteristics of the on-site soils should result in a net volume loss, this is especially true in areas of wasted organics and existing man-made fills. The predicted amount of water required and shrink-swell characteristics can be estimated after compaction testing has been initiated.

In general, suitable inorganic on-site or off-site soils may be used for structural fill. All existing man-made fill, topsoil, or soil containing organic or other deleterious material should be removed prior to placement of structural fill. Off-site material considered for structural fill should be evaluated by a Soil Engineer prior to hauling to the site. Refer to the foundation and slab-on-grade sections of this report for further subgrade preparation recommendations in these structural areas.

The structural fill soils should be placed in eight-inch loose lifts, within 3 percent of optimum moisture content and compacted to at least 95 percent of modified Proctor density, according to ASTM D 1557. Fill materials placed in non-structural areas should be compacted to at least 90 percent of modified Proctor density. Attached is a guide specification for placement and compaction of structural fill. When these operations commence, we should be contacted to provide full-time or part-time density-compaction testing and field observation services as required.

Construction Excavations

In our opinion, the foundation and utility excavations may be constructed using conventional earth-moving equipment for the Denver area. However, excavations should be properly sloped and/or braced to prevent collapse because of caving soils. Local city and/or county regulations should be followed. Excavations made for pier installations should follow the precautions and drilling considerations outlined in the "Foundation Recommendations" section of this report.

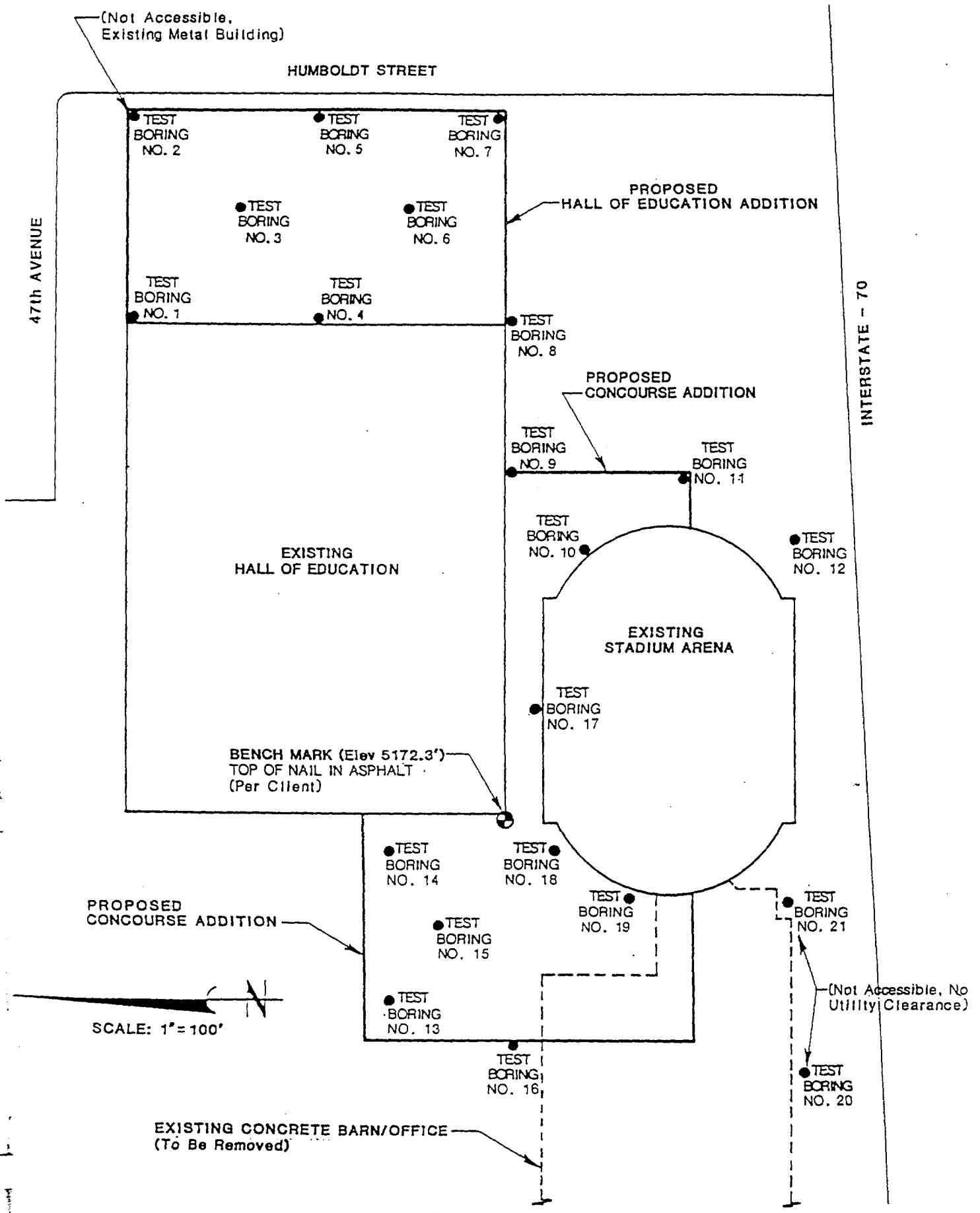
Miscellaneous Considerations

Based upon the existing site topography, we recommend provisions be made to divert surface runoff away from development areas. This should reduce potential problems associated with excess water and/or erosion. This is especially important because the shallow soils are susceptible to moisture changes.

As previously mentioned, existing ground water conditions should not present a problem at this site with the exception of pier drilling as noted under "Foundation Recommendations". However, fluctuations in the existing ground water level should be expected as a result of the proposed development.

LIMITATIONS

The professional judgments expressed in this report meet the standard care of our profession. As requested, test borings drilled for this study were spaced to obtain a reasonably accurate picture of underground conditions for design purposes. Variations frequently occur from these conditions which are not indicated by the test borings. These variations are sometimes sufficient to necessitate modifications in the designs. If unexpected conditions are observed during construction, or if the size, type, or location of the structure additions should change, we should be notified to review our recommendations. Pier drilling, completed footing excavations, and placement and compaction of fill should also be observed by a Soil Engineer.



SITE PLAN
LOCATION OF EXPLORATORY BORINGS
FIGURE 1

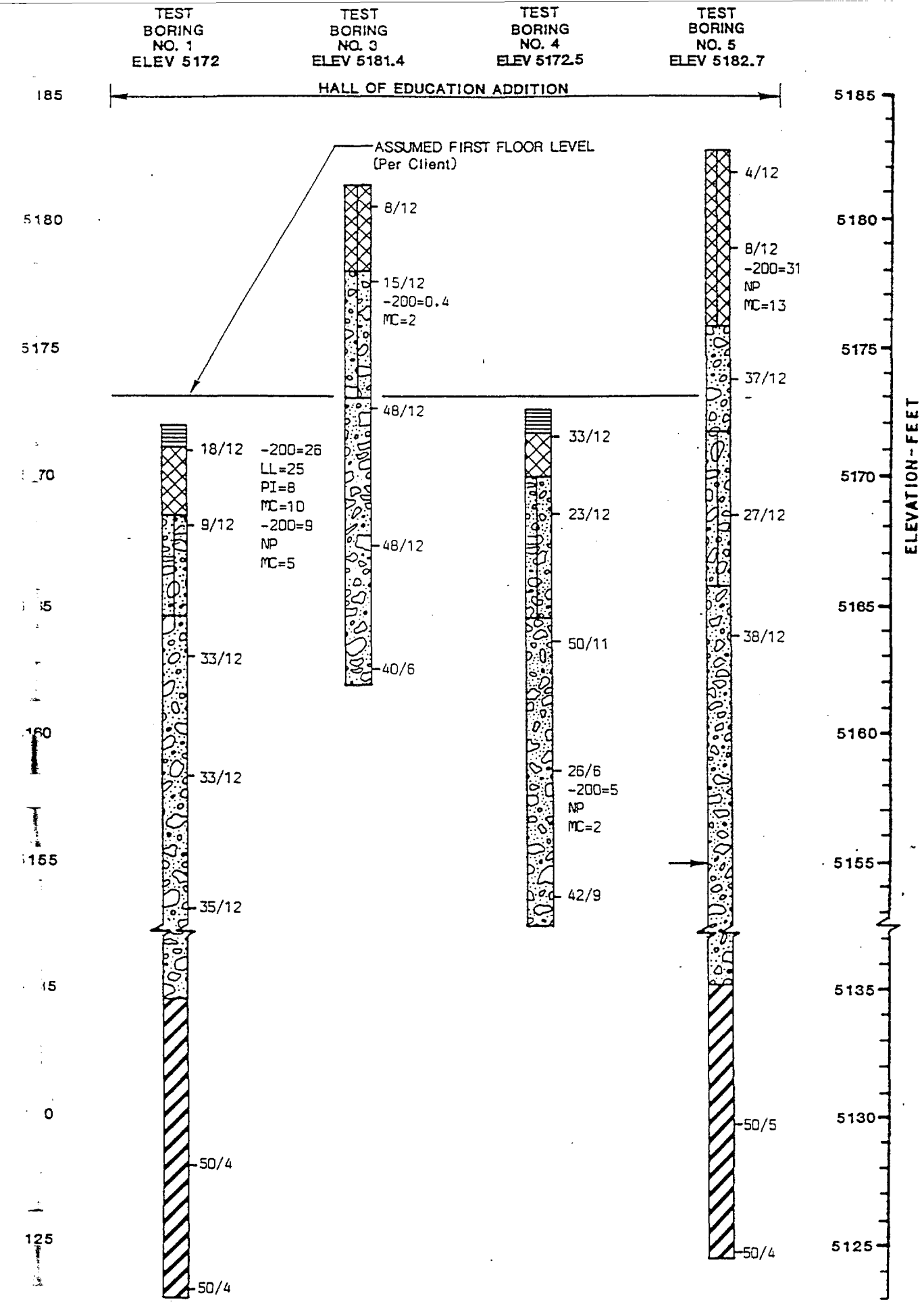


FIGURE 6 (FOLDOUT) FOR COMPLETE LEGEND AND NOTES

LOGS OF EXPLORATORY BORINGS

FIGURE 2

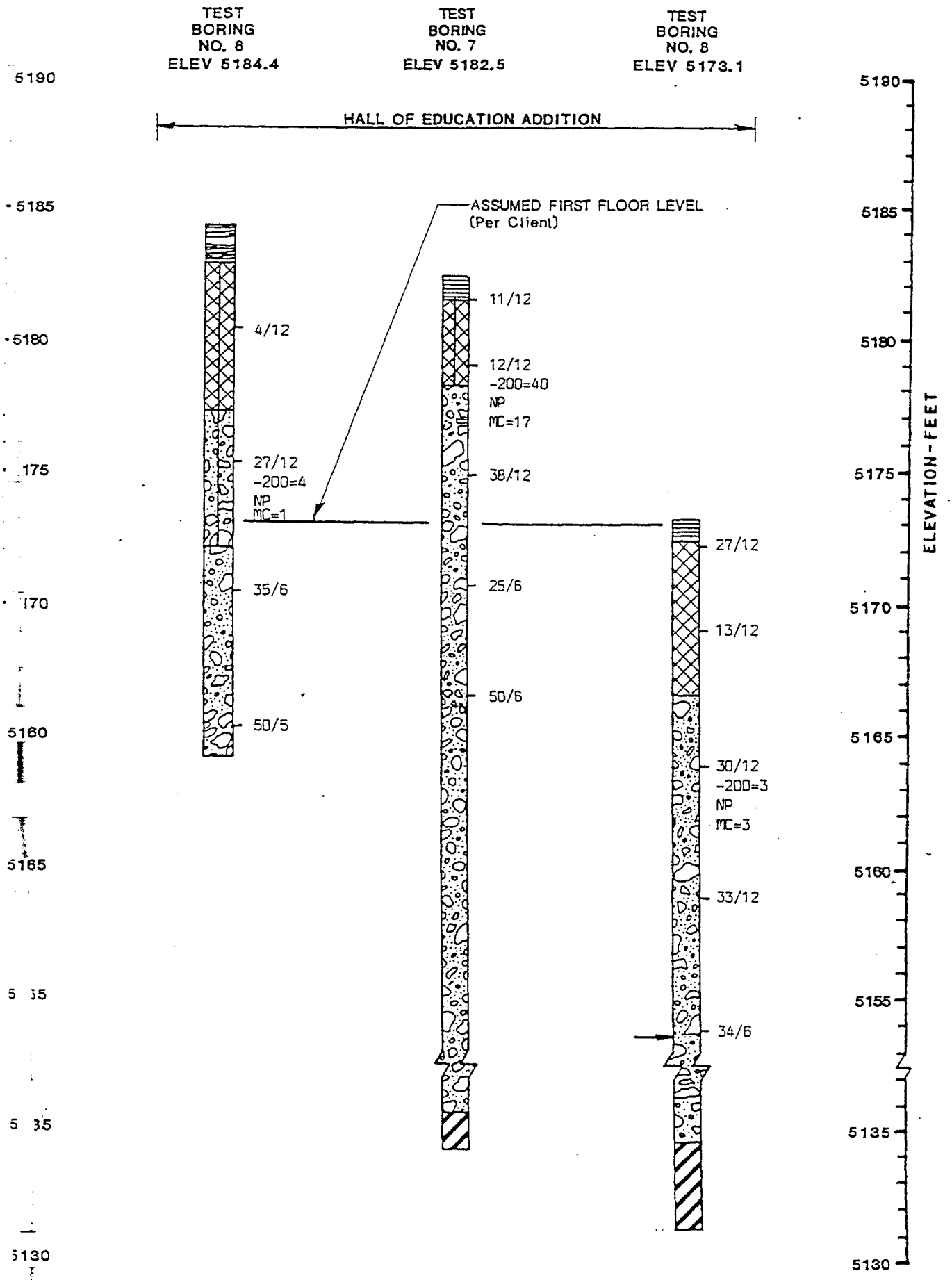
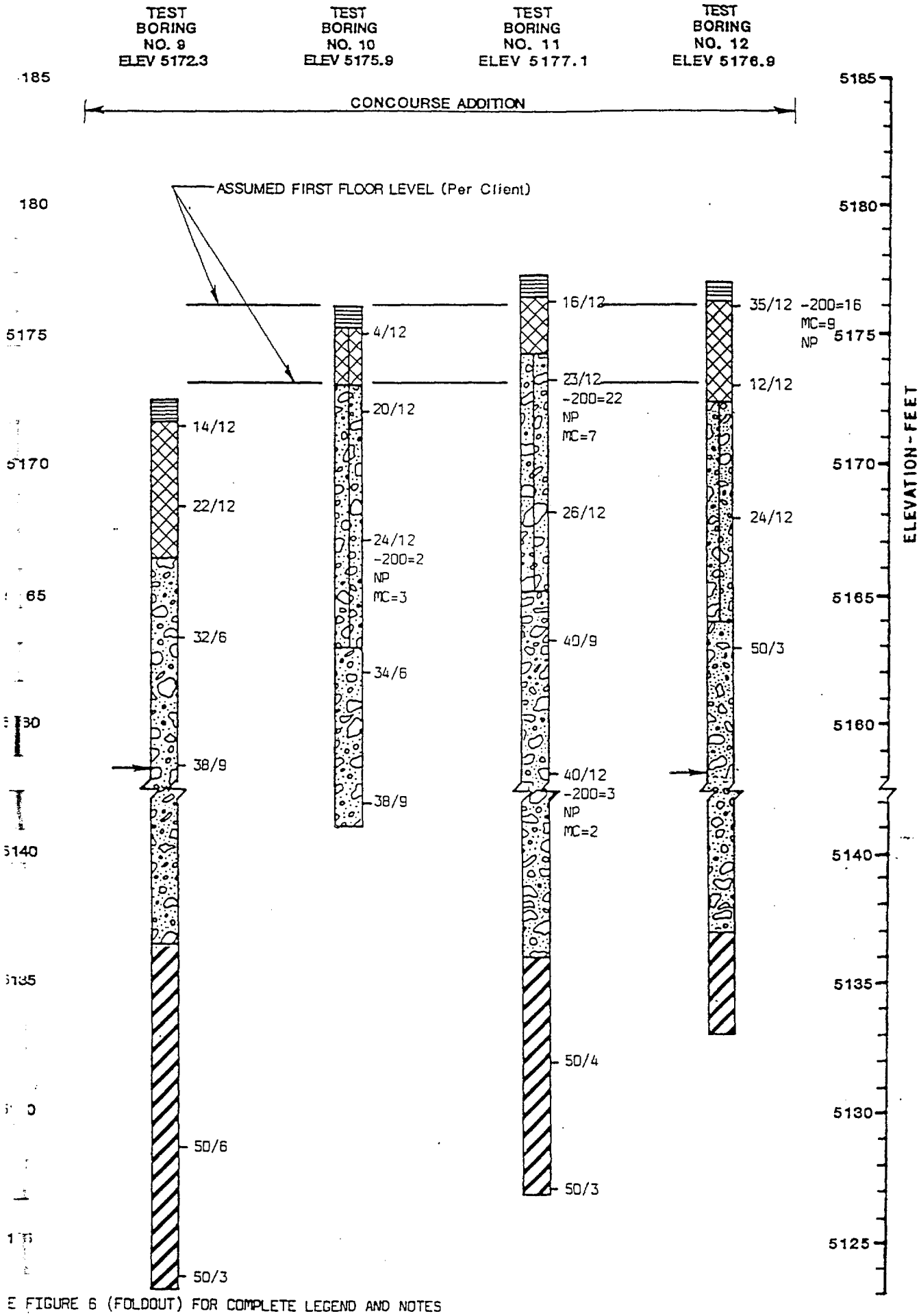


FIGURE 6 (FOLDOUT) FOR COMPLETE LEGEND AND NOTES

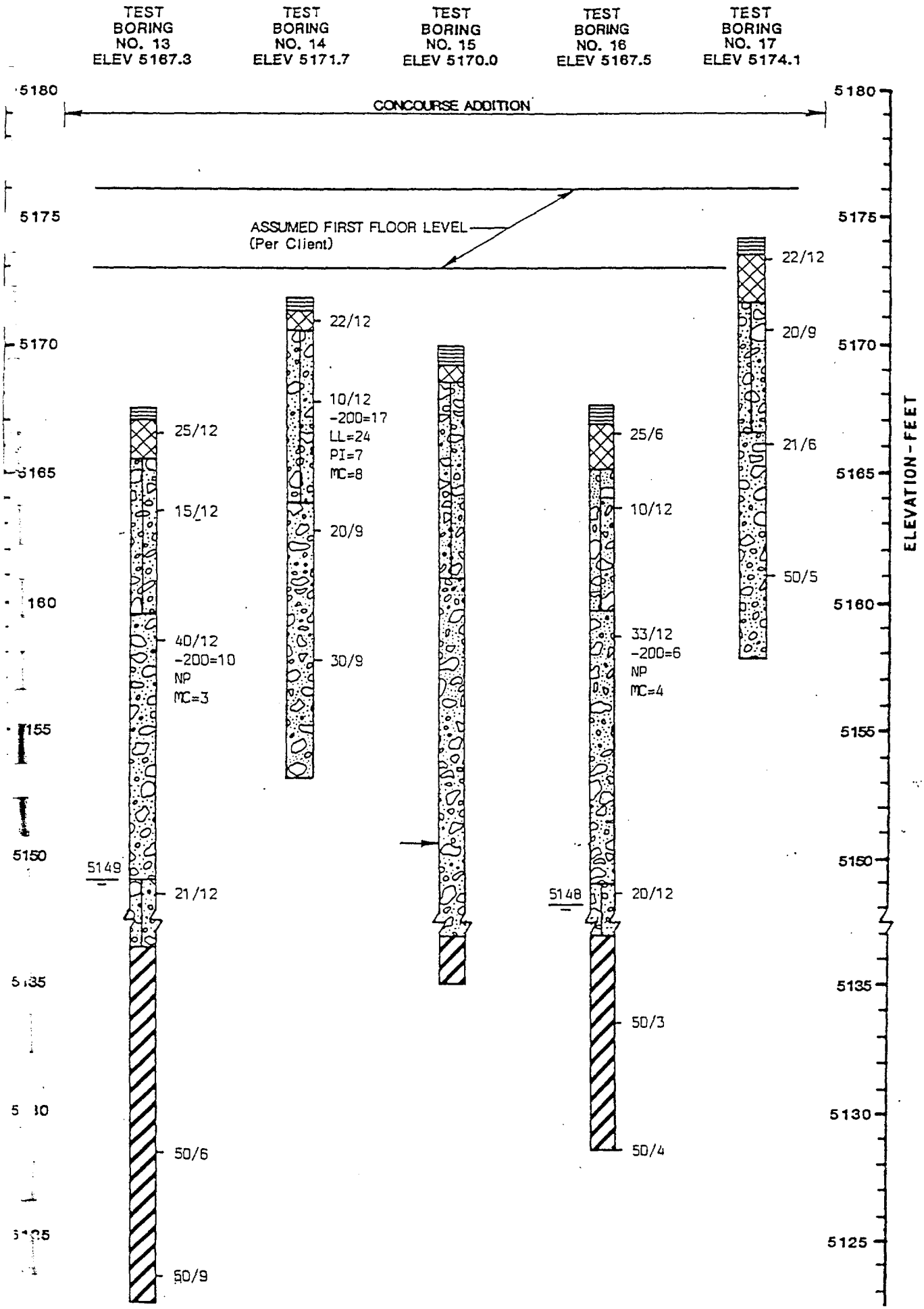
LOGS OF EXPLORATORY BORINGS
FIGURE 3



E FIGURE 6 (FOLDOUT) FOR COMPLETE LEGEND AND NOTES

LOGS OF EXPLORATORY BORINGS

FIGURE 4



E FIGURE 6 (FOLDOUT) FOR COMPLETE LEGEND AND NOTES

LOGS OF EXPLORATORY BORINGS

FIGURE 5

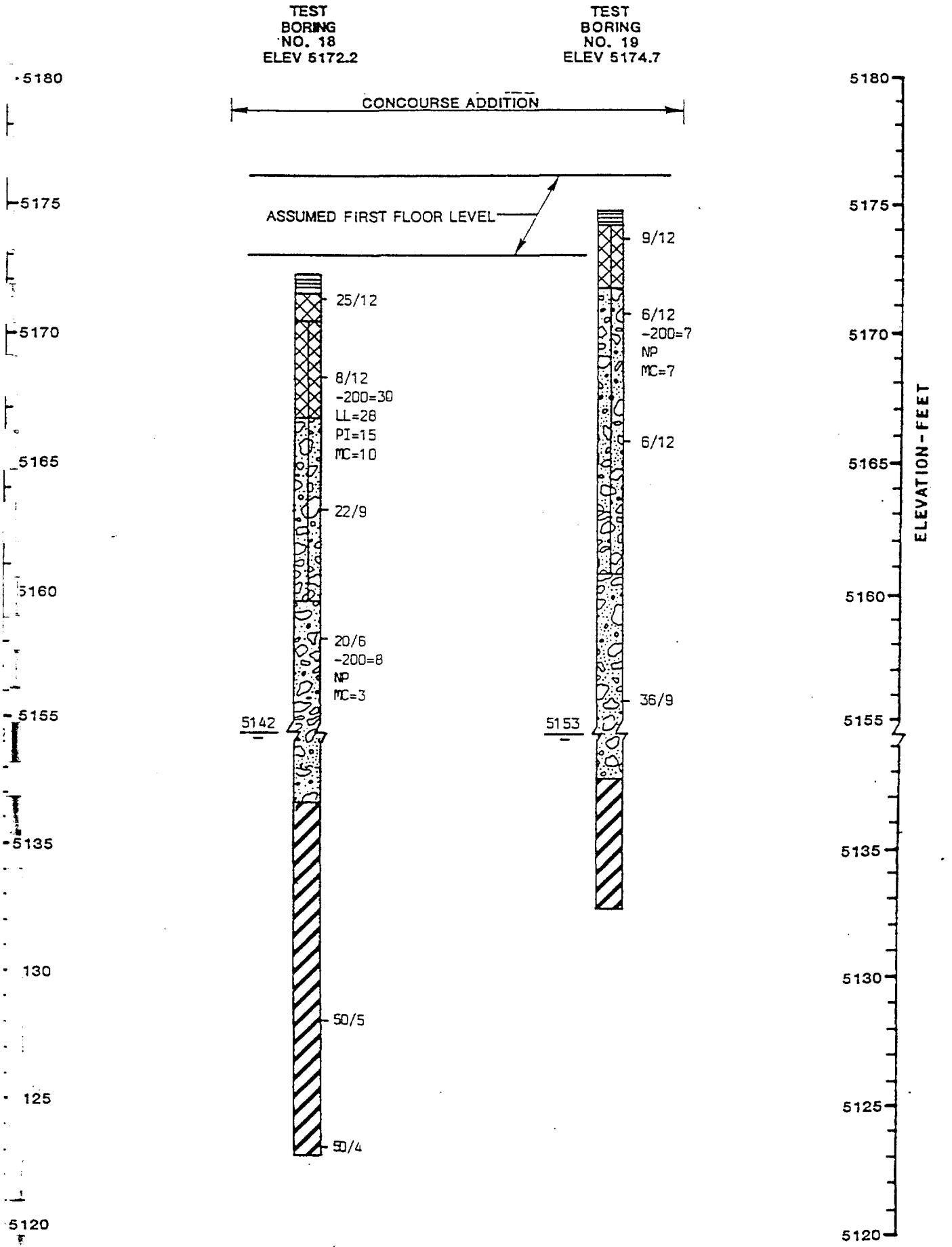


FIGURE 6 (FOLDOUT) FOR COMPLETE LEGEND AND NOTES

LOGS OF EXPLORATORY BORINGS
FIGURE 6

LEGEND

ASPHALT and BASE COURSE.

FILL (man-made), Sand, loose, silty to clayey in part, some gravel noted, slightly moist to moist, light brown to brown to rust (MMF).

FILL (man-made), Sand, compact, clayey to silty to gravelly in part, trace organic, slightly moist to to moist, light brown to dark brown to rust (MMF).

FILL (man-made), Sand, loose, silty, organic with wood chips, medium moist, brown to black (MMF).

SAND and GRAVEL, loose to medium dense, silty and clayey in part, dry to medium moist, light brown to brown (SP,GP,SC,GC,SM,GM).

SAND and GRAVEL, dense, silty in part, some cobbles noted, slightly moist to moist, light brown to brown (SP,GP,SW,GW,SM,GM).

CLAYSTONE (bedrock), very hard, silty to sandy in part, medium moist to moist, blue gray

18/12 Indicates that 18 blows of a 140 pound hammer falling 30 inches are required to drive a 2-inch diameter sampler 12 inches.

5149 Indicates elevation of free water table at the time of drilling. Water levels difficult to detect because hollow augers were required to keep deeper borings open for sampling.

-200 Indicates percent passing the No. 200 Sieve.
LL Indicates Liquid Limit (%).
PI Indicates Plasticity Index (%).
NP Non-plastic.
MC Indicates moisture as a percentage of dry weight of soil.

Indicates the depth at which the tets boring caved.

NOTES

1. Test borings were drilled December 26 and 27, 1989, and January 23, 24, and 26, 1990, using both 4-inch diameter continuous flight power auger and 6-inch diameter hollow stem auger.
2. Locations and elevations of test borings were provided by the Client's Representative.
3. Horizontal lines shown on the logs are to differentiate materials and represent the approximate boundaries between materials. The transitions between materials may be gradual.
4. Drill logs shown in this report are subject to the limitations, explanations, and conclusions of this report.

A. G. WASSENAAR, INC. GEOTECHNICAL CONSULTANTS	
LOGS OF EXPLORATORY BORINGS	PROJECT NUMBER 10842 FIGURE 6

ATTACHMENT 2

Colorado Department of Health Letter

STATE OF COLORADO

COLORADO DEPARTMENT OF HEALTH

4210 East 11th Avenue
Denver, Colorado 80220-3716
Phone (303) 320-8333

Telefax:
(303) 322-9076 (Main Building/Denver)
(303) 320-1529 (Ptarmigan Place/Denver)
(303) 248-7198 (Grand Junction Regional Office)

Roy Romer
Governor

Thomas M. Vernon, M.D.
Executive Director

May 31, 1990

Linn D. Havelick
Havelick & Associates, Ltd.
11925 Quay Street
Broomfield, Colorado 80020

Re: Environmental Audits

Dear Ms. Havelick:

A file check has been conducted, at your request, on the following address:

1. National Western Stock Show Complex
   1325 East 46th Avenue
   Denver, Colorado 80216

Our Underground Storage Tank records, CERCLIS, RCRA, Uranium Mill Tailings Site, Superfund/Remediation, Superfund Amendments and Reauthorization Act (SARA), Section 313, and the Abandoned and Closed Landfill lists were consulted. We have found nothing listed for the above address. However, our records are not always totally correct, so please use the above information with that in mind. In addition, contact local police, fire and health departments for incident information.

For information on SARA Title III 311 and 312 reports, contact Denver county local emergency planning committee. Lt. Don Saltzman, City & County Bldg, Room 3, Denver, Colorado 80202, 575-2676.

Sincerely,

Barbara Bogema
Administrative Officer
Hazardous Materials and
Waste Management Division

BB:lh:0278

cc: File

ATTACHMENT 3

Asbestos Survey

RMS Risk Management Services, Inc.

July 17, 1990

National Western Stock Show Association
Attention: Mr. Jack Byrnes
C/O Newcastle Construction Company
1114 West 7th Avenue
Denver, Colorado 80204

Subject: Building Survey for Asbestos Contain Materials (ACM)
National Western Stock Show Buildings
47th Avenue and Humboldt Street
Denver, Colorado

Dear Jack:

In compliance with your directive, I conducted a building survey of the three structures, Hall of Education, Stadium and Ticket Building, at the subject location on June 26th and 27th, 1990.

ACM was found in both the Hall of Education and the Stadium. None of this material is friable and, at this time, presents no danger to the inhabitants. If removal of this material is contemplated or modification may disturb the material, steps should be taken to protect the environment from exposure to asbestos fibers.

The accompanying report indicates the materials containing asbestos and their location.

Should you have any questions concerning this report or wish further information please call at any time.

Sincerely,
RISK MANAGEMENT SERVICES, INC.
Marvin H Estes
Marvin H. Estes

Enclosure: Bulk Sample Report

NATIONAL WESTERN STOCK SHOW ASSOCIATION
ENVIRONMENTAL INVESTIGATION
SOUTHWEST OF 47TH AVENUE & HUMBOLDT STREET

ASBESTOS SURVEY OF EXISTING STRUCTURES
Dates Performed: June 26,& 27, 1990

BUILDING: Hall of Education

SAMPLE NO.	LOCATION & DESCRIPTION	ASBESTOS CONTENT
NW-1	Men's rest room baseboard	None Detected
NW-2	Blue VAT & mastic from men's rest room	None Detected
NW-3	Tan VAT & mastic from Women's rest room	1-5% Chrysotile
NW-4	Ceiling tile from lounge and restaurant	1-5% Chrysotile
NW-5	Ceiling tile from lounge directly over bar	None Detected
NW-6	Ceiling tile from lounge south of cafeteria	None Detected
NW-7	Blue VAT & mastic from cafeteria and hallway (Mastic 10% Chrysotile)	< 1% Chrysotile
NW-8	Black VAT & mastic from cafeteria and hallway	None Detected
NW-9	Ceiling tile from kitchen trademarked "1/2" FSW Type X Fireshield	None Detectec

BUILDING: Stadium

NW-10	Orange VAT & mastic from west cafeteria	1-5% Chrysotile
NW-11	Tan VAT & mastic from west cafeteria	1-5% Chrysotile
NW-12	Ceiling tile from booth area east end of stadium	None Detected
NW-13	Spray on plaster from north office	None Detected

RISK MANAGEMENT SERVICES, INC.

EXPERIENCE AND QUALIFICATION RESUME

Revised July, 1990

3705 Kipling Street, Suite 201, Wheat Ridge, CO 80033 • (303) 422-4542

RISK MANAGEMENT SERVICES, INC.

EXPERIENCE AND QUALIFICATION RESUME

Asbestos Abatement Consulting

It is not sufficient that an asbestos consulting firm merely identify asbestos containing materials and their location.

First, and foremost, the consultant represents the interest of the businesses, school boards or building owners. Due to this, it is important that the consultant not be connected with an abatement contractor.

One of the primary jobs for consultants is to conduct a facilities survey to check for asbestos containing products. No rational decision or long term planning can be accomplished until an owner or school official understands their problems and more importantly puts these problems into proper perspective.

Once the survey for asbestos containing materials is complete, a plan of action must be prepared based on the results. Consultants can be invaluable in the development of long and short term plans. It is imperative that the consultants be familiar with various abatement options and their associated costs.

The future plans must include:

1. Complete documentation, recordkeeping and mapping of the survey process.
2. Risk assessment of all asbestos containing materials (ACM).
3. Guidelines detailing what type and how much asbestos the internal staff may be allowed to deal with.
4. Preparation of Operation and Maintenance (O&M) program and assignment for responsibility to carry out the program.
5. Preparation of specifications for the proper abatement activities.
6. Qualification of abatement contractors.
7. Incorporate asbestos abatement into all future renovations.
8. Implement the RMS exclusive computerized estimating program to establish responsible costs of abatement.

9. Administrations of abatement contracts including air monitoring during a removal process. (For example: In order for the protection of the responsible parties be guaranteed, it would be desirable to have final clearance and air sampling performed by third parties not financially connected to the abatement contractor.)
10. Preparation and execution of the documentation process, an absolute in all abatement activity. The Owner/Manager of asbestos containing property must be protected for up to thirty years against litigation that might result from improper abatement activity. The documentation will serve as positive proof the abatement was carried out in a responsible manner. The Owner/Manager will not become vulnerable in what has become a litigious society.

Due to the above requirements an asbestos consultant must be experienced in all phases of the abatement industry. To demonstrate the varied experience of Risk Management Services, Inc. (RMS) in this industry a partial list of clients and buildings are included in this resume to substantiate its claim that RMS is highly qualified as a consultant to building owners, managers, companies, and school officials who desire the services of a responsible and capable consulting firm.

Underground Storage Tanks and Related Piping

Because of existing and anticipated legislation concerning underground storage tanks and related piping, RMS has added to its staff engineering expertise to deal with this situation. In addition to its comprehensive program on asbestos, RMS has the capability to identify and locate uncharted and/or abandoned tanks, testing for underground leakage of tanks and piping, and supplying recommendations for any necessary remedial action.

To minimize the leakage from an underground storage tank system, RMS is prepared to implement a comprehensive tank management strategy specifically designed for each individual location. It is not sufficient to inspect only the underground tanks but the piping as well. Piping leaks tend to occur

Underground Storage Tanks (continued)

sooner than the tank and may represent up to 60% product loss from the underground tank system. Frost, fittings, improper installation, and vibration are the primary culprits in piping losses. For this reason, any tank management program must consider piping design and leakage. This management program would include but not limited to: development of detailed installation specifications for underground systems, certification of tank installation contractors, installation of appropriate corrosion protection systems, routine tank monitoring, tank integrity testing, soil tank monitoring, and/or ground water monitoring, product inventory control systems, and a leak response program.

An effective tank management or discovery and disposal program as listed herein will be covered by an RMS comprehensive documentation program to rationalize potential environmental damage and risk from any future litigation.

Lead and Lead Containing Products

Lead is a hazardous material as defined in the 1976 Resource and Recovery Act. Lead has no biological value and elevated exposure can effect almost all of the body functions. The public is becoming increasingly concerned over the presence and danger of lead in the form of lead based paints and lead in water piping that will have both economic and biological effects on our society.

Risk Management Services, Inc., as a result of extensive study and research, has determined that the Building Owner/Developer could well be served by a consultant who is knowledgeable with this hazardous material. This knowledge includes identification, evaluation of the economic impact to a structure, potential risk to occupants, knowledge of existing and proposed regulations, and methods of dealing with lead in its many forms.

RMS has developed a program that will not only accomplish the above activities, but also, a "state of the art" specification for dealing with lead and lead containing materials in all types of conditions and localities. RMS can also qualify remediation contractors, supervise the bidding process, supervise the work to completion, and prepare documentation to serve as the "paper trail" that the work was accomplished without endangering the workers and the public.

RISK MANAGEMENT SERVICES, INC.
EXPERIENCE AND QUALIFICATION RESUME
(Continued)

Management

The RMS management team represents a combination of technical and managerial experience in the asbestos abatement industries.

Deena S. Sax, founder and co-owner of RMS, Industrial Hygienist specializing in the asbestos industry, brings considerable experience in banking, having worked for a Denver area bank for five years as an Operations Officer. Ms. Sax has full knowledge of banking and some insurance experience.

Deena was also employed for four years by electrical and mechanical contractors working as a contract administrator, project coordinator, project manager and estimator. During this time she was involved with major asbestos abatement projects in the Denver area including the Denver Federal Center.

In April of 1987, Deena successfully completed a post graduate course in Asbestos Abatement Practices and Procedures from the University of Utah and has received full certification from the Environmental Protection Agency. In April of 1988, Deena continued on to complete full AHERA certification for Building Inspector, Management Planner and Project Designer.

Marvin H. Estes, founder and co-owner of RMS, Industrial Hygienist specializing in the asbestos industry, has over 30 years experience in the construction industry, having owned and operated his own companies for 20 years of that time. Mr. Estes graduated from the Colorado School of Mines with an Engineering Degree.

In 1982, Marvin formed and served and President for Mobile Detox, Inc., the first company to design and manufacture a mobile decontamination unit, now being used as standard equipment throughout the abatement industry. Another first was the manufacture of negative air units and 3-piece portable shower units.

He has been involved in several major abatement removal jobs dating back to 1979, including Stapleton Airport, Denver; Federal Building and Court House, Missoula, Montana; Veterans Administration Hospital, Denver; Adams County School District, Colorado; Buckley Air National Guard, Aurora, Colorado; Lowry Air Force Base, Denver; and Fitzsimons Army Medical Center, Denver, Colorado.

RMS

Management (Continued)

In April of 1987, Marvin successfully completed a post graduate course in Asbestos Abatement Practices and Procedures from the University of Utah. In April of 1988, Marvin continued on to complete full AHERA certification for Building Inspector, Management Planner and Project Designer.

The Survey Technicians employed by RMS have been trained according to the RMS Operations Manual as well as having full certification by the EPA.

Professional Organizations

National Asbestos Council - Member since 1987
Associated General Contractors - Member since 1989, serving on Safety and Health Committee, as well as the Legal Advisory Board.

REFERENCES

Hensel Phelps Construction Company
Project: Colorado Convention Center
Contact: Mr. Nicholas Jovene, Project Manager
Mr. Robert Meserve, Project Engineer
Phone: (303) 352-6565

Denver Urban Renewal Authority
Project: Denver Dry Goods Building
Contact: Mr. Chuck Perry, Asst. Executive Director
Phone: (303) 295-3872

Littleton Public School District
Project: Littleton Public Schools
Contact: Mr. Randy Murphy, Asbestos Manager
Phone: (303) 795-7007

City and County of Denver
Project: Colorado Convention Center
John Mansville Claim
Contact: Mr. Larry Fullerton, Deputy Director of
Public Works - Projects
Phone: (303) 575-3224

Newcastle Construction Company
Project: National Western Stock Show Facility
Contact: Mr. Jack Byrnes, General Manager
Phone: (303) 825-1919

RMS

ATTACHMENT 4

Contractor Statements

NEWCASTLE

NEWCASTLE CONSTRUCTION COMPANY
1114 West Seventh Avenue
Denver, Colorado 80204
Fax 303) 825-0885
303) 825-1[illegible]

A Petry Company

August 13, 1990

Mr. Gerald W. Knudsen, P.E.
Hydro-Triad, Ltd.
1310 Wadsworth Blvd., Suite 100
Lakewood, CO 80215

RE: Environmental Assessment

Dear Gerald:

Although Newcastle Construction Company was not directly involved in the work, our personnel were on site during the recently completed excavation of soil at the National Western Stock Show Project.

The area excavated was bordered by 47th Avenue on the North, Humboldt Street on the East, the Hall of Education on the West with the southern boundary being a line running east from the southeast corner of the Hall of Education. The soil excavated varied from a depth of approximately 184'-0 to 172'-0.

We were not asked to look for discoloration of the soil or make special efforts to detect any unusual odors which would be indicative of contamination from petroleum storage tanks. However, during the course of our work our personnel did not note any unusual conditions.

If you have any questions or concerns, please feel free to contact the undersigned.

Sincerely,

Rebecca W. Wright
Assistant Field Manager

ATTACHMENT 5

A.G. Wassenaar Report
Jerry's Garage

A. G. WASSENAAR, INC.
GEOTECHNICAL CONSULTANTS
PHONE: 303/759-8100 FAX: 756-2920 2180 S. IVANHOE, SUITE 5 DENVER, COLORADO 80222

UNDERGROUND STORAGE TANK SOIL TESTING STUDY FOR

NATIONAL WESTERN STOCK SHOW
47TH AND HUMBOLDT
DENVER, COLORADO

PREPARED FOR

RISK MANAGEMENT SERVICES, INC.
3705 KIPLING, SUITE 201
WHEAT RIDGE, COLORADO 80033

AUGUST 1, 1990
PROJECT NUMBER 11423-A

Underground Storage Tank Soil Testing Study
National Western Stock Show
47th & Humboldt
Denver CO
August 1, 1990

Purpose

At the request of Mr. Marvin Estes of Risk Management Services, Inc., A. G. Wassenaar, Inc. (AGW) conducted sampling and analysis in an area on the National Western Stock Show premises where an underground storage tank (UST) was reportedly used during the 1970s. It was reported by Mr. Lawrence Perry that one UST was used in this area and may have been previously removed. The subsoil in this general vicinity was sampled and analyzed to ascertain the current condition of the subsurface environment with respect to petroleum hydrocarbons.

Introduction

On July 14, 1990, AGW personnel visited the site located approximately 400 feet west of the intersection of 47th and Humboldt Streets in Denver, Colorado. Mr. Perry, a 35-year veteran with the National Stock Show Association, was at the site and identified the general vicinity of where the UST was buried. AGW mobilized a drill rig and crew and drilled two soil borings, as shown on Figure 1. The soil borings were advanced, using a 4-inch diameter, continuous flight auger powered by a CME drilling rig. The two soil borings, TB-4 and TB-5, were advanced in the general vicinity that reportedly contained one UST to a total depth of 14 feet. At frequent intervals, samples of the subsoils were taken using a split spoon sampler which is driven into the soil by dropping a 140-pound hammer through a free fall of 30 inches. The split spoon sampler is a 2.0-inch outside diameter device. The number of blows required to drive the sampler into the soils is known as a penetration test. The number of blows required for the sampler to penetrate 12 inches gives an indication of the consistency or relative density of the soils encountered. Soil samples were analyzed visually for soil classification purposes and evaluation

for contamination characteristics (i.e., soil, color, organic vapors), as shown on Figure 2. Soil samples obtained from the two soil borings showed no signs of contamination (hydrocarbon odors and visible soil staining).

Test Borings TB-4 and TB-5 indicate the subsoils in general consist of 14 feet of very loose, gravelly sand. One soil sample was obtained from each test boring at a depth of 14 feet. The two soil samples were mixed in a stainless steel bucket, and one sample labeled TB-4/TB-5 was obtained and submitted to Evergreen Analytical Inc. (EAI), Wheat Ridge, Colorado, for analysis.

Photo-Ionization Readings

Field analyses for hydrocarbons in soil samples were conducted using a photo-ionization detector (PID). The PID allows detection of volatile organic compounds with an ionization potential of 10.6 ev or less, such as benzene (a common component of gasoline). Analyses with this instrument in the field is only semi-quantitative. To perform the analysis, we placed a soil sample in a sealed container and inserted the PID sample probe into the container to allow an air sample to be drawn from the head space in the sample container. The maximum reading for each sample was recorded. Measurements are recorded in Relative Response Units (RRU) which are a relative indication of volatile organic concentrations. Field tests for these two borings showed no PID reading (refer to Figure 2 for the specific depths of these PID readings).

Laboratory Test Results

A total of one (1) soil sample was submitted to EAI and analyzed by Environmental Protection Agency (EPA) test method 418.1 for total recoverable petroleum hydrocarbons (TRPH) and by the EPA method 8020 for benzene, toluene, ethylbenzene, and xylene (BTEX). These test methods are suitable for analyzing gasolines and diesel range fuels.

The laboratory test results are contained in Attachment A and summarized below:

Location	Matrix	Depth (ft)	Parameter	Results (ppb)[1]	Results (ppm)[2]
TB-4/TB-5	Soil	14	Benzene	ND[3]	
			Toluene	ND	
			Ethylbenzene	ND	
			Total Xylenes	ND	
			TRPH[4]		ND

(1) ppb = parts per billion

(2) ppm = parts per million

(3) ND = not detected

(4) TRPH = total recoverable petroleum hydrocarbons

Conclusions

AGW drilled two test borings in an area that reportedly contained one UST. Two soil samples were obtained and analyzed for gasoline and diesel range fuels. Laboratory test results and physical observations indicate that no petroleum hydrocarbons were identified within the soil.

Sincerely,

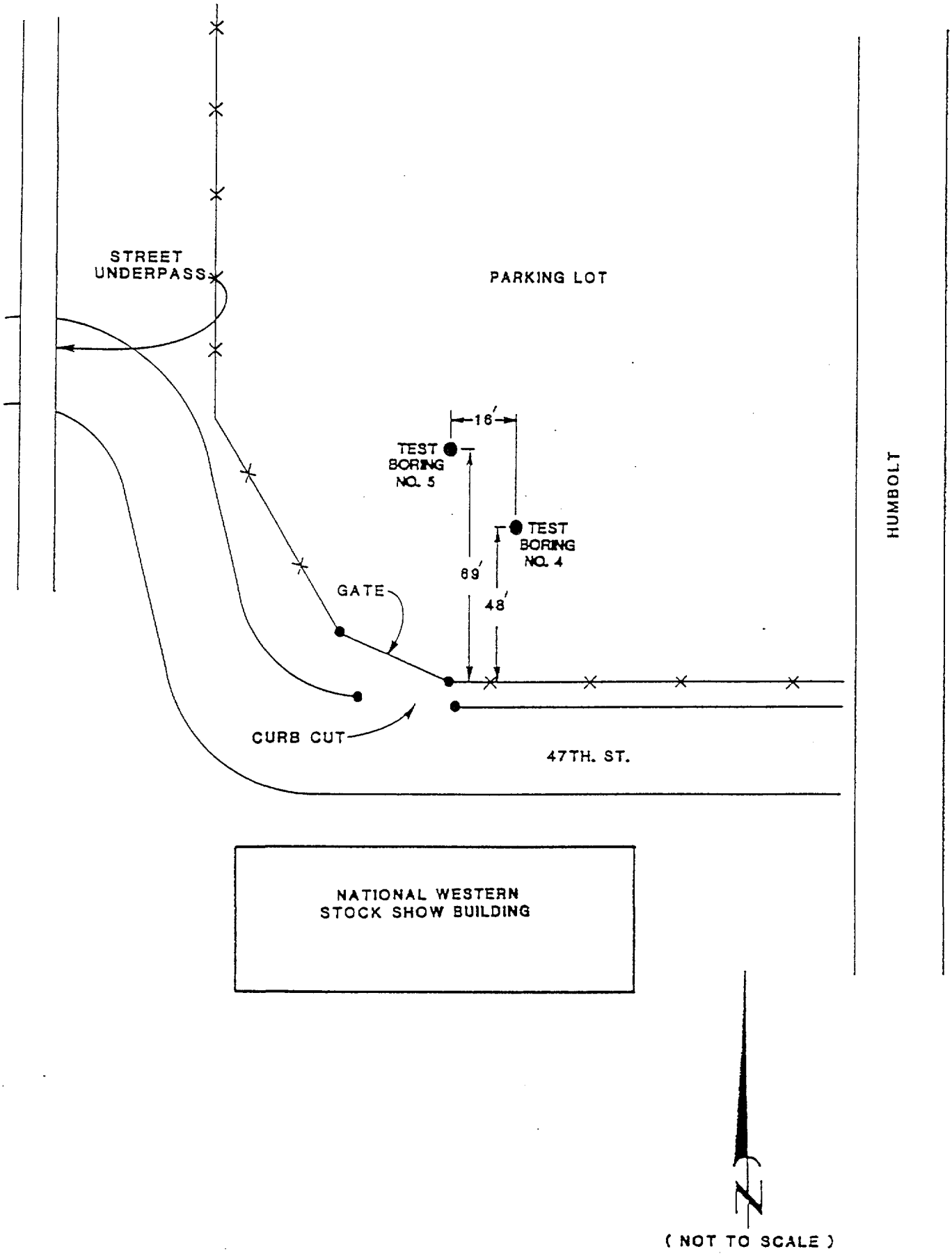
A. G. WASSENAAR, INC.

Brian J. Glade, P.E.
Senior Environmental Engineer

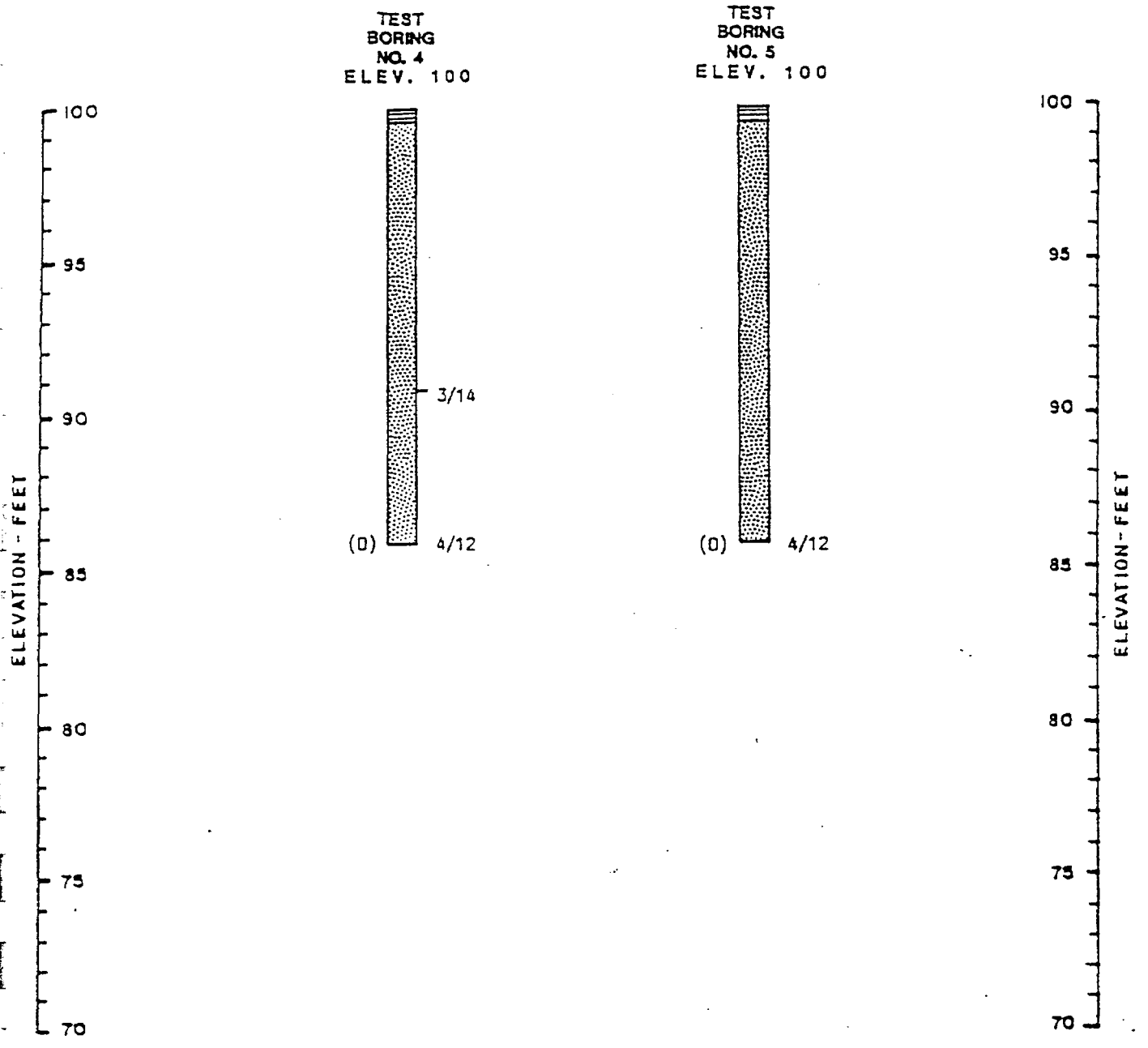
Allen G. Wassenaar, P. E.
President

BJG/AGW/rj

Statement of Services



SITE PLAN
FIGURE 1



LEGEND

ASPHALT (3")

SAND, very loose, slightly gravelly, fine to medium grained, moist, brown (SW)

6/8 Indicates that 6 blows of a 140 pound hammer falling 30 inches are required to drive a 2-inch diameter samoler 8 inches.

(0) Indicates photo-ionization detector (PID) readings in relative response units.

NOTES

1. Test borings were drilled July 19, 1990 with a 4-inch diameter continuous flight power auger.
2. Locations of test borings were measured by pacing from features shown on the site plan provided by others.
3. Elevations are approximate and refer to the topographic site plan provided by others.
4. The horizontal lines shown on the logs are to differentiate materials and represent the approximate boundaries between materials. The transitions between materials may be gradual.
5. Drill logs shown in this report are subject to the limitations, explanations, and conclusions of this report.

LOGS OF EXPLORATORY BORINGS
FIGURE 2

ATTACHMENT A

LABORATORY TEST RESULTS

Evergreen Analytical, Inc.

4036 Youngfield Street
Wheat Ridge, CO 80033-3865
(303) 425-6021
FAX (303) 425-6854

July 26, 1990

Mr. Brian Glade
A. G. Wassenaar
2180 S Ivanhoe, #5
Denver, CO 80222

Data Report : 90-07-3123-8509-A
Client Project : 11423-A

Dear Mr. Glade:

Enclosed are the analytical results for the samples shown in the Sample Log Sheet. Also enclosed is an invoice for this work If you have any questions concerning the reported information, please contact Carl Smits or me.

The samples marked for return on the Sample Log Sheet will be returned one week from the date of this letter. Two (2) weeks from the date of this report, samples not marked for return will be disposed of by us and samples placed on "hold" but not analyzed will be returned.

Thank you again for using the services of Evergreen Analytical.

Sincerely,

John H. Barney
President

EVERGREEN ANALYTICAL, INC
4036 Youngfield St. Wheat Ridge, CO 80033
(303) 425-6021

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Date Received : 7/19/90
Date Sampled : 7/19/90
Date Prepared : 7/19/90
Date Analyzed : 7/19/90

Client Project : 11423-A
Lab Project No.: 8509-A
Method : EPA 418.1

Evergreen Sample No.	Client Sample No.	Matrix	TRPH*
X23831	TB-4/5	"	<3.03 "

Reported values based on specific gravity of 1.0; Detection limit 3.03 mg/Kg for soils.

Approved

Quality Assurance Officer

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021

BTEX Data Report

ent Sample #	: TB-4/5		
Sample #	: X23831	Client Project #	: 11423-A
te Sampled	: 07/19/90	Lab Project #	: 8509-A
te Received	: 07/19/90	Dilution Factor	: 1.000
e Extracted/Prepared	: 07/23/90	Method	: 8020
e Analyzed	: 07/23/90	Matrix	: Soil
rcent Loss on Drying	: NA	Lab File No.	: PID5628
anol extract?	: No	Method Blank No.	: MB07/23/90

mpound Name	Cas Number	Concentration ug/Kg	PQL* ug/Kg
ene	71-43-2	U	4
luene	108-88-3	U	4
l Benzene	100-41-4	U	4
l Xylenes	1330-20-7	U	---

rrogate Recoveries;
a-Trifluorotoluene 83%

LIFIERS:
Compound analyzed for, but not detected.
Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
Compound found in blank and sample. Compare blank and sample data.
The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
Not applicable or not available.

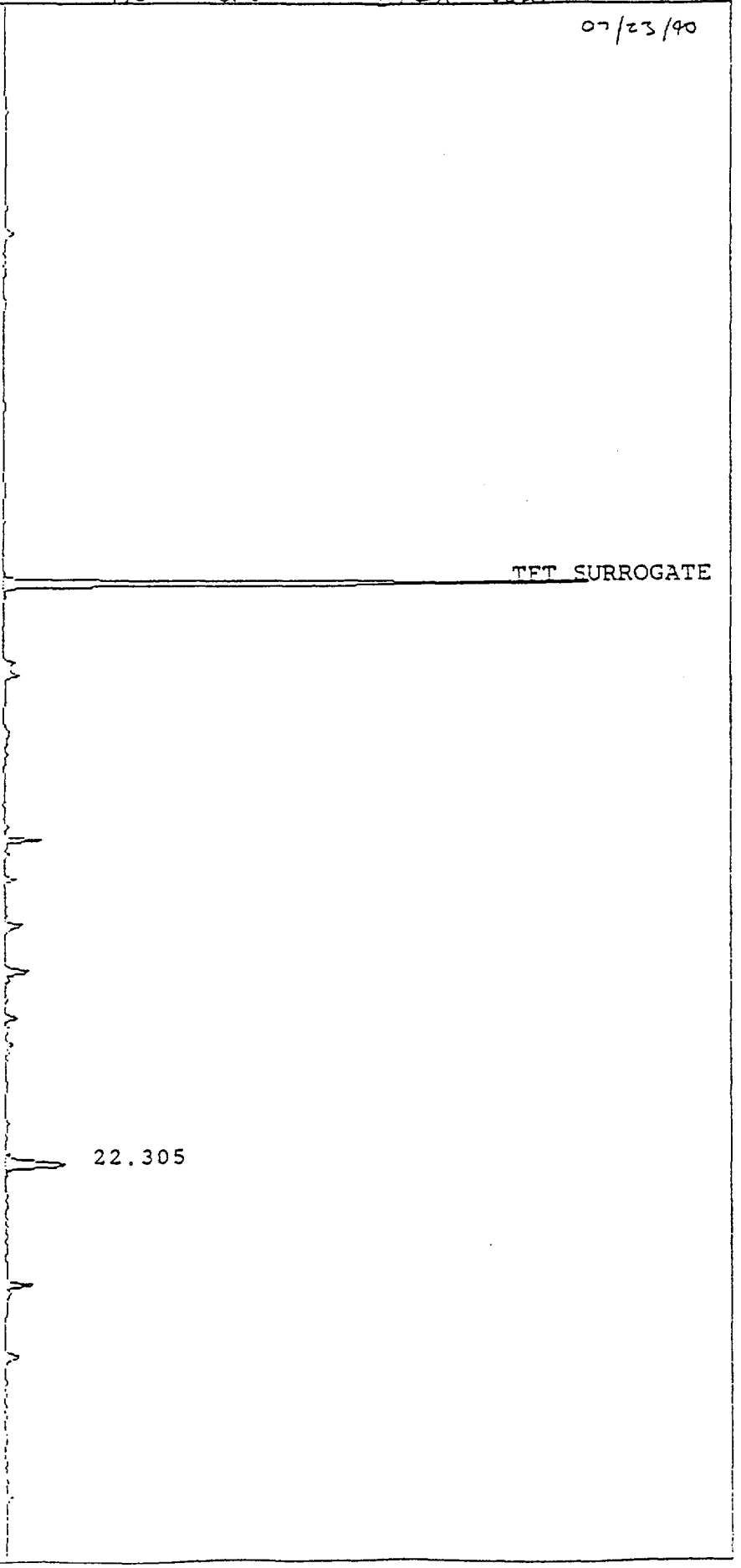
roved: ______________

Quality Assurance Officer

forms\btex.pln

09-A X23931 TB-4/5 df:1 RTEX 8070 PID5628

07/23/90



EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021
BTEX Data Report
Method Blank Report

hod Blank Number	: MB07/23/90	Client Project No.	: 11423-A
e Extracted/Prepared	: 07/23/90	Lab Project No.	: 8509-A
te Analyzed	: 07/23/90	Dilution Factor	: 1.000
		Method	: 8020
		Matrix	: Water
		Lab File No.	: PID5612

mpound Name	Cas Number	Concentration ug/L		PQL* ug/L
zene	71-43-2		U	4
luene	108-88-3		U	4
l Benzene	100-41-4		U	4
al Xylenes	1330-20-7		U	---

rogate Recoveries;
,a-Trifluorotoluene 105%

LIFIERS:
= Compound analyzed for, but not detected.
= Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
= Compound found in blank and sample. Compare blank and sample data.
= The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
= Not applicable or not available.

oved: D Blaschke

V Stephens
Quality Assurance Officer

forms\btex.pln

QA MB 07/23/90 BLANK BTEX 8020 PIDS612
07/23/90

TFT SURROGATE

ATTACHMENT 6

A.G. Wassenaar Report
Yockey Trucking

A. G. WASSENAAR, INC.
GEOTECHNICAL CONSULTANTS
PHONE: 303/759-8100 FAX: 756-2920 2180 S. IVANHOE, SUITE 5 DENVER, COLORADO 80222

UNDERGROUND STORAGE TANK SOIL TESTING STUDY FOR

NATIONAL WESTERN STOCK SHOW
47TH AND HUMBOLDT
DENVER, COLORADO

PREPARED FOR

RISK MANAGEMENT SERVICES, INC.
3705 KIPLING, SUITE 201
WHEAT RIDGE, COLORADO 80033

JULY 27, 1990
PROJECT NUMBER 11423

Underground Storage Tank Soil Testing Study
National Western Stock Show
47th & Humboldt
Denver CO
July 27, 1990

Purpose

At the request of Mr. Marvin Estes of Risk Management Services, Inc., A. G. Wassenaar, Inc. (AGW) conducted sampling and analysis on soil below three underground storage tanks (USTs). It was reported by Mr. Estes that two USTs were removed from a common excavation on the south end of an existing floor slab and that one UST was removed from the east end of the floor slab, as shown on Figure 1. The floor slab and USTs were used as part of a shop building for the National Western Stock Show. The three USTs were removed on June 29, 1990, by Wayne Gomez Demolition and Excavating, Inc. AGW obtained soil samples from below the tank areas to complete final closure requirements according to the current federal regulations for USTs (Code of Federal Regulations, 40 CFR, Part 280, Subpart 6).

Introduction

On July 14, 1990, AGW personnel visited the site located at 1440 North Humboldt Street, Denver, Colorado. Mr. Estes was at the site and detailed the site history and location of the USTs. He provided information concerning the excavation and removal of three USTs by Wayne Gomez Demolition and Excavating, Inc. (see Attachment A). These records include an inspection report by the City and County of Denver Fire Prevention Bureau, which indicated that no visible contamination was present below any of the three USTs removed.

Tank Excavation 1

On July 14, 1990, Mr. Brian Glade, Senior Engineer for AGW, mobilized a drill rig and crew to the subject property and drilled three soil borings, as shown on Figure 1. The soil borings were advanced, using a 4-inch diameter, continuous flight auger powered by a

CME drilling rig. Two soil borings, TB-1 and TB-2, were advanced within the excavation that reportedly contained two tanks to a total depth of 14 feet. Test Boring 3 was drilled to a total depth of 9 feet within the excavation that contained a single waste tank. At frequent intervals, samples of the subsoils were taken using a split spoon sampler which is driven into the soil by dropping a 140-pound hammer through a free fall of 30 inches. The split spoon sampler is a 2.0-inch outside diameter device. The number of blows required to drive the sampler into the soils is known as a penetration test. The number of blows required for the sampler to penetrate 12 inches gives an indication of the consistency or relative density of the soils encountered. Soil samples were analyzed visually for soil classification purposes and evaluation for contamination characteristics (i.e., soil, color, organic vapors), as shown on Figure 2. Soil samples obtained from the three soil borings showed no signs of contamination (hydrocarbon odors and visible soil staining).

Test Borings TB-1 and TB-2 indicate the subsoils in general consist of 11 feet of man-placed, very loose, sand with some concrete debris, overlying a dense gravelly sand. One soil sample was obtained from each test boring at a depth of 14 feet. The two soil samples were mixed in a stainless steel bucket, and one sample labeled TB-1/TB-2 was obtained and submitted to Evergreen Analytical Inc. (EAI), Wheat Ridge, Colorado, for analysis.

Test Boring TB-3 indicated the subsoils consist of 8 feet of man-placed, very loose sand, with some concrete debris overlying a dense, gravelly sand. One soil sample was obtained from the test boring at 9 feet of depth and submitted to EAI for analysis. A more complete description of the subsoils is shown on Figure 2.

Photo-Ionization Readings

Field analyses for hydrocarbons in soil samples were conducted using a photo-ionization detector (PID). The PID allows detection of volatile organic compounds with an ioniza-

tion potential of 10.6 ev or less, such as benzene (a common component of gasoline). Analyses with this instrument in the field is only semi-quantitative. To perform the analysis, we placed a soil sample in a sealed container and inserted the PID sample probe into the container to allow an air sample to be drawn from the head space in the sample container. The maximum reading for each sample was recorded. Measurements are recorded in Relative Response Units (RRU) which are a relative indication of volatile organic concentrations. Field tests for these three borings ranged from 0 to 2 RRU (refer to Figure 2 for the specific depths of these PID readings).

Laboratory Test Results

A total of two (2) soil samples were submitted to EAI and analyzed by Environmental Protection Agency (EPA) test method 418.1 for total recoverable petroleum hydrocarbons (TRPH) and by the EPA method 8020 for benzene, toluene, ethylbenzene, and xylene (BTEX). These test methods are suitable for analyzing gasolines and diesel range fuels. The laboratory test results are contained in Attachment B and summarized below:

Location	Matrix	Depth (ft)	Parameter	Results (ppb)[1]	Results (ppm)[2]
TB-1/TB-2	Soil	14	Benzene	ND[3]	
			Toluene	ND	
			Ethylbenzene	ND	
			Total Xylenes	ND	
			TRPH[4]		26.7
TB-3	Soil	9	Benzene	ND	
			Toluene	ND	
			Ethylbenzene	ND	
			Total Xylenes	ND	
			TRPH		64.3

(1) ppb = parts per billion

(2) ppm = parts per million

(3) ND = not detected

(4) total recoverable petroleum hydrocarbons

Laboratory test results have identified TRPH within the soil on the site.

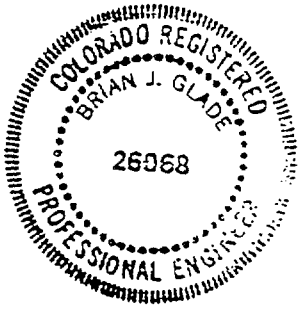
Colorado currently has no regulations regarding permissible levels of TRPH. The Colorado Department of Health (CDH) has suggested an action level at 100 ppm or greater of TRPH in soil. Levels less than this have been determined to be potentially of no regulatory significance. These values are only a guide and should not be considered a regulatory criteria.

Recommendations

AGW would recommend no further action be taken at this site with regard to soil testing. This report should be submitted to the CDH Underground Storage Tank Division as part of final closure requirements.

Sincerely,

A. G. WASSENAAR, INC.

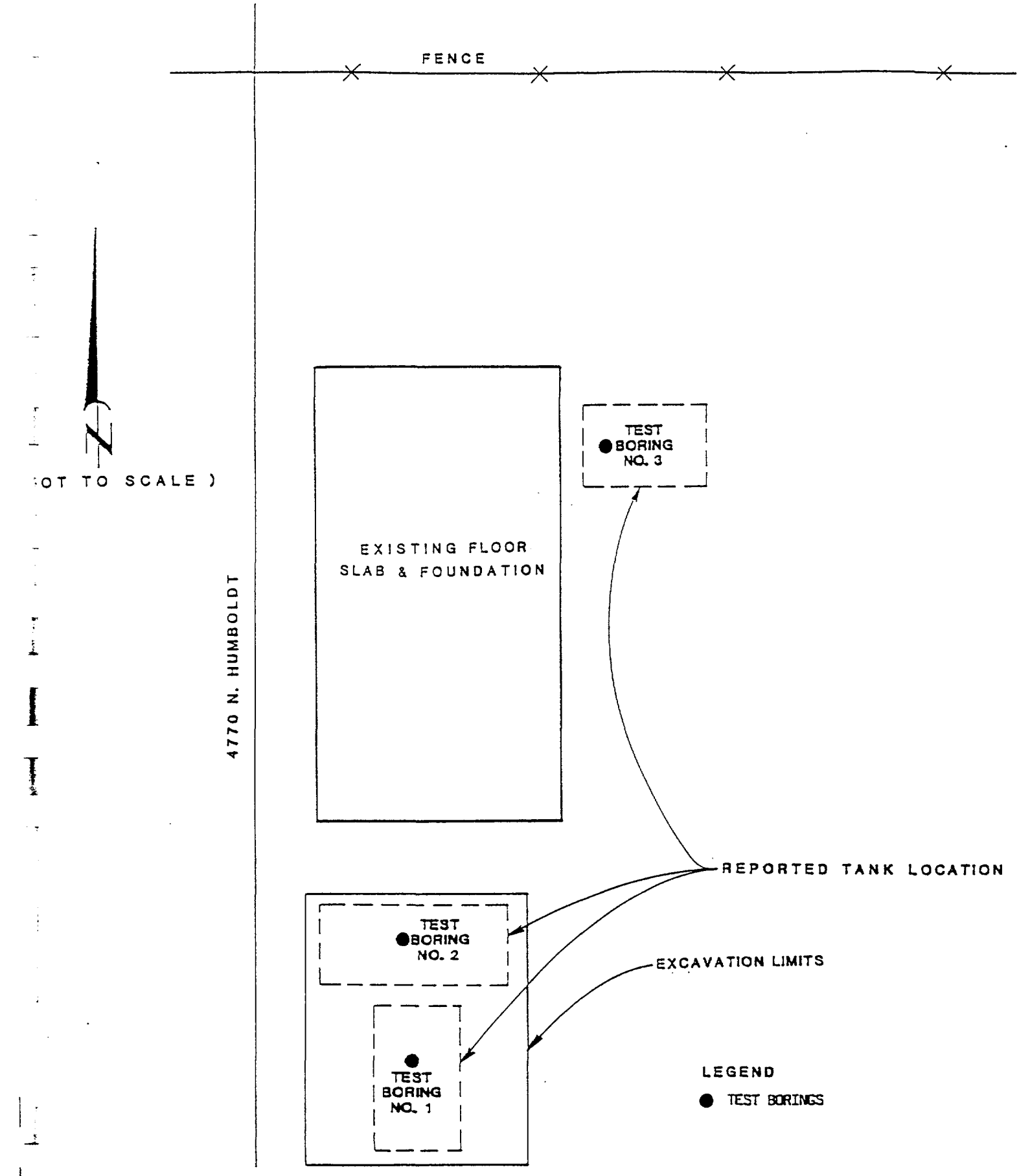


Brian J. Glade, P.E.
Senior Environmental Engineer

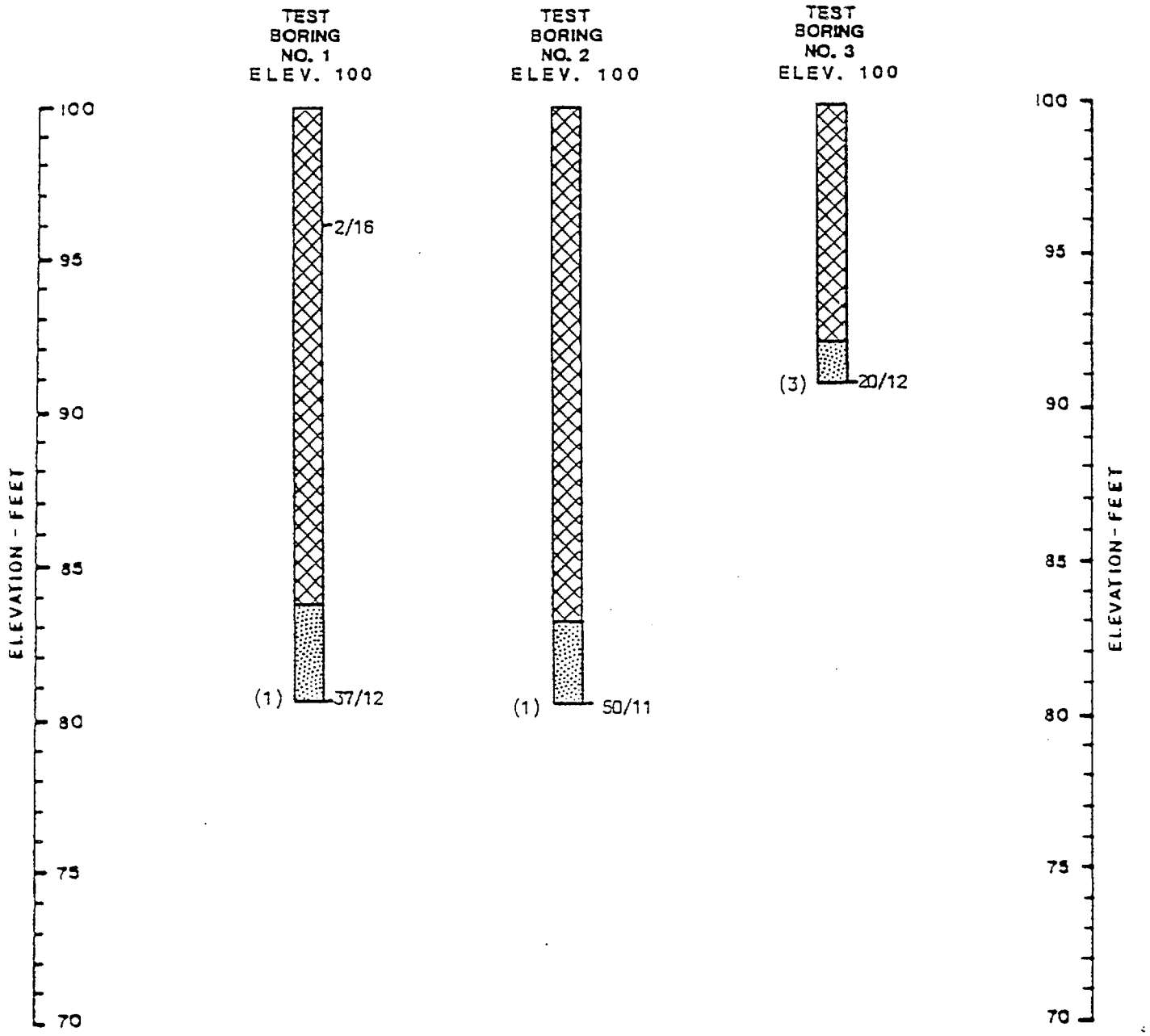
Allen G. Wassenaar, P. E.
President

BJG/AGW/rj

Statement of Services



SITE PLAN
LOCATIONS OF EXPLORATORY BORINGS
FIGURE 1



LEGEND

FILL, man placed, sand, slightly clayey, concrete debris, moist, brown (SM)

SAND, dense, medium to coarse, gravelly, moist, tan (SW)

6/8 Indicates that 6 blows of a 140 pound hammer falling 30 inches are required to drive a 2-inch diameter sampler 8 inches.

(8) Indicates photo-ionization detector (PID) readings in relative response units.

NOTES

1. Test borings were drilled July 19, 1990 with a 4-inch diameter continuous flight power auger.
2. Locations of test borings were measured by pacing from features shown on the site plan provided by others.
3. Elevations are approximate and refer to the topographic site plan provided by others.
4. The horizontal lines shown on the logs are to differentiate materials and represent the approximate boundaries between materials. The transitions between materials may be gradual.
5. Drill logs shown in this report are subject to the limitations, explanations, and conclusions of this report.

LOGS OF EXPLORATORY BORINGS
FIGURE 2

ATTACHMENT A

UNDERGROUND STORAGE TANK CERTIFICATES

DU-WALD STEEL CORPORATION
COMMERCIAL IRON AND METAL COMPANY, INC.

July 6, 1990

Mr. Lawrence Perry
NATIONAL WESTERN STOCK SHOW
1325 East 46th Avenue
Denver, Colorado 80216

Dear Mr. Perry:

On June 29, 1990, the Wayne Gomez Demolition Company removed one (1) 1,000 gallon underground storage tank from your facility at 4770 Humboldt in Denver, Colorado. This tank has been processed at Du-Wald Steel Corporation as scrap iron for remelting purposes only.

Sincerely,

DU-WALD STEEL CORPORATION

Michael Vasquez
General Manager

:ck

cc: Wayne Gomez Demolition

DU-WALD STEEL CORPORATION
COMMERCIAL IRON AND METAL COMPANY, INC.

July 9, 1990

Mr. Lawrence Perry
NATIONAL WESTERN STOCK SHOW
1325 East 46th Avenue
Denver, Colorado 80216

Dear Mr. Perry:

On June 29, 1990, the Wayne Gomez Demolition Company removed two (2) underground storage tanks - one (1) 1,000 gallon and one (1) 6,000 gallon - from your facility at 4770 Humboldt in Denver, Colorado. These tanks have been processed at Du-Wald Steel Corporation as scrap iron for remelting purposes only.

Sincerely,

DU-WALD STEEL CORPORATION

Michael Yourtz
General Manager

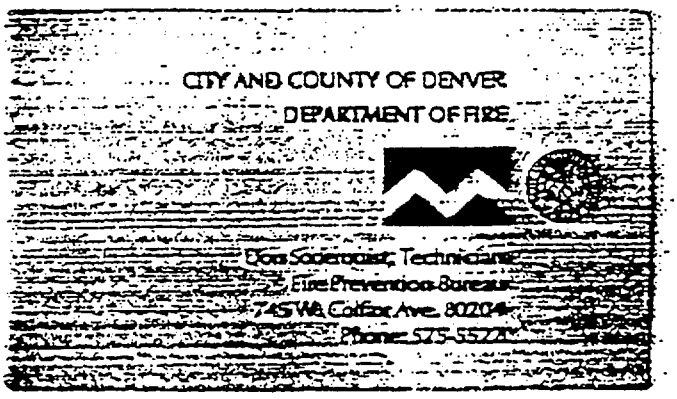
:ck

cc: Wayne Gomez Demolition

[illegible] • DENVER, CO [illegible] • (303) [illegible]

CITY AND COUNTY OF DENVER
DEPARTMENT OF FIRE

Lt. Richard Reilly
Fire Prevention Bureau
745 W. Colfax Ave., 80204
Phone: (303) 575-5522



City and County of Denver
Denver Fire Department
Fire Prevention Bureau
745 W. Colfax Ave.
Denver, CO 80204 575-5522

STORAGE TANK PERMIT

Number 22-90-0106

Type 22

NAME (Firm, Corporation, Individual): NATIONAL STOCK SHOW SHOPS

APPLICATION DATE: 6/28/90

STREET ADDRESS (where tanks are installed): 4770 HUMBOLDT

ZIP CODE:

PHONE:

INSTALLER:

PHONE:

INSTALLER ADDRESS:

CITY:

STATE: ZIP CODE:

INSTALLATION INFORMATION

TANK MANUFACTURER:

DISTRIBUTOR:

TANK TYPE
- ☐ Above Ground ☐ Vaulted
- ☐ Buried

PROPERTY TYPE
- ☐ Private Property
- ☐ Public Property

TYPE PRODUCTS
- ☐ Petroleum
- ☐ Chemical

OTHER PERMITS
- ☐ Public Works Permit
- ☐ Zoning Permit

TANK INFORMATION

- ☐ Double Walled Tank
- ☐ Secondary Containment
- ☐ Overfill Protection
- ☐ Vapor Monitoring
- ☐ Suction Pump
- ☐ Pressure Pump
- ☐ Leak Detector
- ☐ Emergency Shutoff Valve
- ☐ Emergency Power Shutoff

NUMBER OF EXISTING Tanks:

PRODUCT	CAPACITY	U. L. NUMBER	TANK CONSTRUCTION

TANK REMOVAL

CONTRACTOR NAME: GAMEZ DEMOLITION

ADDRESS: P.O. Box 1233

CITY: ARVADA

STATE: CO

ZIP CODE: 80001

METHOD
- ☐ Removed
- ☐ Filled

REASON
- ☐ Evidence of Leakage
- ☐ Free Liquid
- ☐ Wet / Moist Soil
- ☐ Additional Testing Needed

ADDITIONAL ACTION
- ☒ Soil Report Required
- ☐ Remediation Necessary

Tested for Flammable Vapors
- ☒ Yes
- ☐ No

RESULTS: 14% — 6%

DISPENSERS - PUMPS - PIPING

Describe: 3 TANKS TO BE REMOVED

NO VISIBLE CONTAMINATION

DATE INSPECTED: 6/7/90

INSPECTED BY:

CFD 94 (Rev. 1/89)

Wayne Gomez Demolition & Excavating, Inc.

P.O. Box 1233 ● Arvada, Colorado 80001 (303) 287-5555

Colorado Division of Labor
Oil Inspection Division, UST Program
1001 E. 62 Ave., Bldg. 1
Denver, Colorado 80216

Attn: Mr. Michael J. Powell
State Inspector of Oils

Re: Proposed UST Remediation

Mr. Powell:

Per your requirements, please consider this correspondence as ten day notification of our intent to remove the exsisting UST's at the following location:

LOCATION OF REMOVAL 4750 Humbolt Street
Denver, Colorado 80216
Owner: National Western Stockshow

TANKS TO BE REMOVED 500gal. Steel (Gasoline)
1000gal. Steel (Diesel)
2000gal. Steel (Diesel)

SITE ASSESSMENT TO BE DONE BY:
Risk Management Services

LOCAL FIRE DEPARTMENT NOTIFED:
Denver Fire Department

Thank you for your assistance inthis matter.

Regards,

Curt W. Creager

Date Submitted: 5-25-90

ROY ROMER
Governor

DEPARTMENT OF LABOR AND EMPLOYMENT

DIVISION OF LABOR
OIL INSPECTION SECTION

1001 E. 62nd Ave., Bldg. 1
DENVER, CO 80216

ACK # 451

To: CURT CRAGER - WAYNE GOMEZ DEMOLITION
P.O. BOX 1233
ARVADA COLO 80001

Dear Sir or Madam:

Your notice of intent to close or remove 3 underground storage tanks at FACILITY WESTERN STOCK SHOW
STREET 4750 HUMBOLDT CITY DENVER
has been received by the State Oil Inspection Section.
FAC.REG.NO. 0005419 OWNER.ID.NO. 5244

- [ ] No. of tanks, Size, or contents of tanks not included.
- [ ] Actual location of tanks is not clearly stated.
- [ ] No record has been found for this facility. Are there any other underground storage tanks at the facility? If there are other tanks or if you own any other unregistered tanks, please notify SOIS.
- [ ] No mention of a "site assessment" was made. (You must assess the tank site for possible contamination at the time of closure)
- [ ] You must also notify the Fire Department having jurisdiction over the facility, and make sure that no building permit is required by zoning commission.
- [x] No Problems With The Notice.

REMOVE (1) 500 GAL, (1) 1,000 GAL AND (1) 2,000 GAL TANKS. ALL TANKS REMOVED.

JUN 1990

DATE 6/1/90 SIGNATURE
Oil Inspection Section - DOLE - R. Stoup ~~Staff Engineer~~

Note: If contamination is found during the site assessment: You must file a "CORRECTIVE ACTION" plan with the Hazardous Materials Division of the Colorado Health Department - 4210 E. 11th Ave. Denver, Co. 80220 - Tel. (303) 331-4830

ATTACHMENT B

LABORATORY TEST RESULTS

Evergreen Analytical, Inc.

4036 Youngfield Street
Wheat Ridge, CO 80033-3865
(303) 425-6021
FAX (303) 425-6854

July 26, 1990

Mr. Brian Glade
A. G. Wassenaar
2180 S Ivanhoe, #5
Denver, CO 80222

Data Report : 90-07-3122-8509
Client Project : 11423

Dear Mr. Glade:

Enclosed are the analytical results for the samples shown in the Sample Log Sheet. Also enclosed is an invoice for this work If you have any questions concerning the reported information, please contact Carl Smits or me.

The samples marked for return on the Sample Log Sheet will be returned one week from the date of this letter. Two (2) weeks from the date of this report, samples not marked for return will be disposed of by us and samples placed on "hold" but not analyzed will be returned.

Thank you again for using the services of Evergreen Analytical.

Sincerely,

John H. Barney
President

EVERGREEN ANALYTICAL, INC.
4036 Youngfield Wheat Ridge, CO 80033
(303)425-6021

SAMPLE LOG SHEET

Client A. G. WASSENAAR INC
Address 2180 So. IVANHOE #5
DENVER, CO 80222
Contact B GLADE
Sampled 7/19/90 COC Received 7/19/90 2:30
Report Due 7/25/90 Holding Time 8/2/90
Client Project # 11423
Client P.O. # 11423
Phone # 759-8100 Fax # 756-2920
Shipping Charges —
Special Instructions

Project # 8509
Airbill # HAND DELIVERED
Custody Seal present? no intact?
COC present? yes
Sample Tags present? YES
Sample Tags # listed? YES
Custodian, Date [signature] 7/19/90
Fax Results? YES

Lab ID #	Client. ID #	Analysis	Mtx	Btl	Loc	File #/Date	R*
23829 A	TB-1/TB-2	BTEX 8020	S	4oz w.m	2		
23830 A	TB-3	"	"	2oz w.m	"		
23831 A	TB-4/5	"	"	4oz w.m	"		
23829 B	TB-1/TB-2	TRPH 418.1	"	"	"		
23830 B	TB-3	"	"	"	"		
23831 B	TB-4/5	"	"	4oz w.m	"		

Samples to be returned

EVERGREEN ANALYTICAL, INC.
4036 Youngfield Street Wheat Ridge, CO 80033
(303) 425-6021

COMPANY A G WASSENAAR INC CONTACT B. GLADE
ADDRESS 2180 So. Ivanhoe #5 PROJECT #/NAME STOCK SHOW / 11423
DENVER Co 80222 P.O. # 11423
PHONE # 759-8100 FAX # 756-2920 FAX RESULTS (Y) / N TURNAROUND REQUIRED * STD.
* AN EXPEDITED TURNAROUND MAY BE SUBJECT TO ADDITIONAL FEES

CHAIN-OF-CUSTODY RECORD

SAMPLERS SIGNATURE BJG

Sta. No.	Date	Time	Station Location	No. of Containers	Analysis Required		BETX	TRPH							REMARKS
	7-19-90		TB-1 / TB-2	2			✓	✓							
	7-19-90		TB-3	2			✓	✓							
	7-19-90		TB-~~3/4~~ 4/5	2			✓	✓							

Relinquished by: (signature) BJ Glade Date/Time 7/19/90 Rec'd by [signature]
Relinquished by: (signature) [signature] Date/Time 7-19-90 2:30 Rec'd by: B. Gomez

EVERGREEN ANALYTICAL, INC
4036 Youngfield St. Wheat Ridge, CO 80033
(303) 425-6021

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Date Received : 7/19/90
Date Sampled : 7/19/90
Date Prepared : 7/19/90
Date Analyzed : 7/19/90

Client Project : 11423
Lab Project No.: 8509
Method : EPA 418.1

Evergreen Sample No.	Client Sample No.	Matrix	TRPH*
X23829	TB-1/TB-2	Soil	26.7 mg/Kg
X23830	TB-3	"	64.3 "

*Reported values based on specific gravity of 1.0; Detection limit 3.03 mg/Kg for soils.

Approved

Quality Assurance Officer

EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021

BTEX Data Report

ient Sample #	: TB-1/TB-2		
Sample #	: X23829	Client Project #	: 11423
e Sampled	: 07/19/90	Lab Project #	: 8509
e Received	: 07/19/90	Dilution Factor	: 1.000
Extracted/Prepared	: 07/23/90	Method	: 8020
Analyzed	: 07/23/90	Matrix	: Soil
cent Loss on Drying	: NA	Lab File No.	: PID5625
anol extract?	: No	Method Blank No.	: MB07/23/90

pound Name	Cas Number	Concentration ug/Kg		PQL* ug/Kg
ene	71-43-2		U	4
uene	108-88-3		U	4
l Benzene	100-41-4		U	4
al Xylenes	1330-20-7		U	---

rogate Recoveries;
a,a-Trifluorotoluene 96%

ALIFIERS:
Compound analyzed for, but not detected.
Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
= Compound found in blank and sample. Compare blank and sample data.
The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
Not applicable or not available.

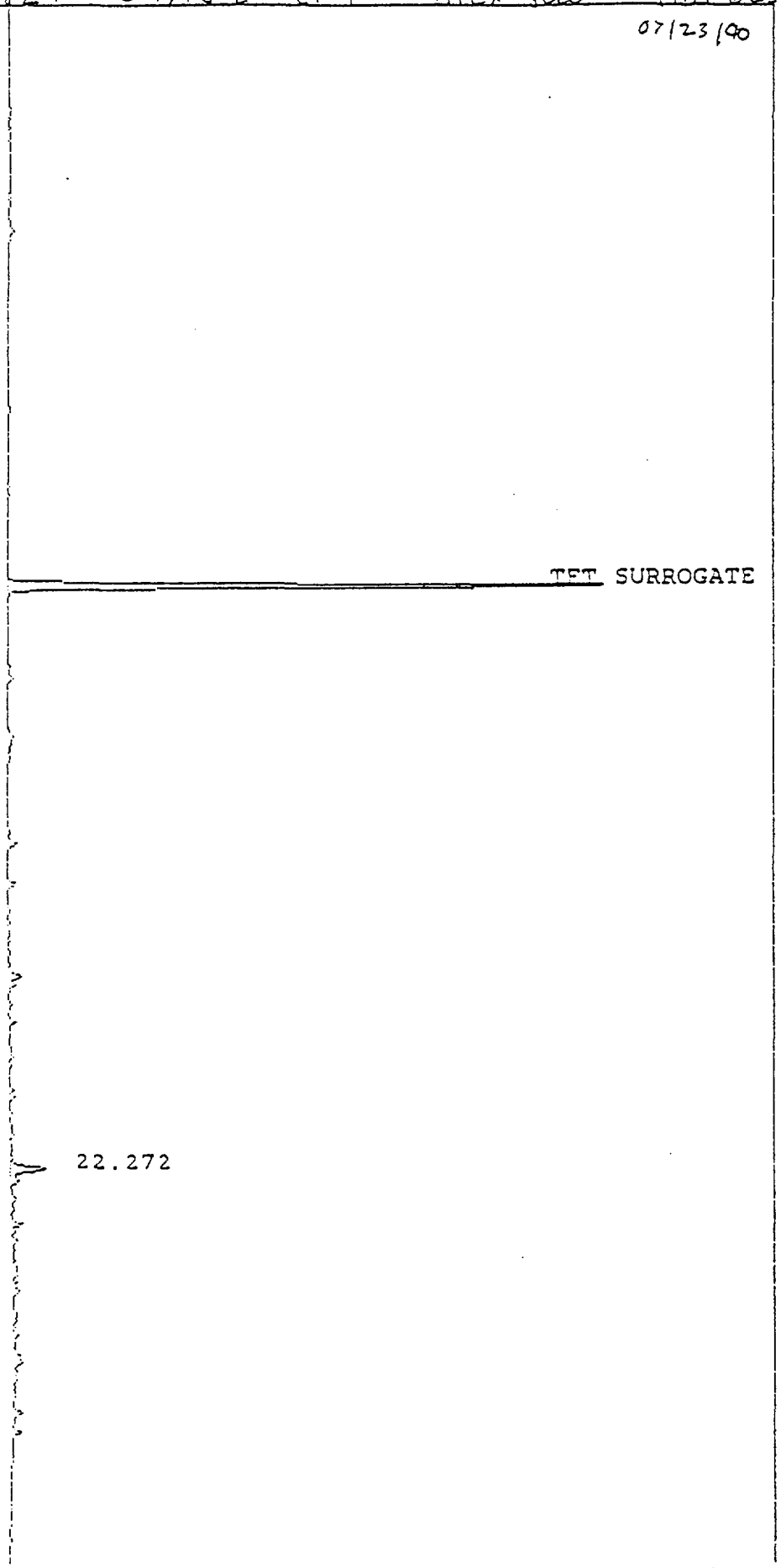
proved: D. Blasch

V. Stephens
Quality Assurance Officer

forms\btex.pln

09 X23829 TB-1/TB-2 df-1 BTEX 8020 PIDS 625

07/23/90



EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021

BTEX Data Report

ient Sample #	: TB-3		
Sample #	: X23830	Client Project #	: 11423
e Sampled	: 07/19/90	Lab Project #	: 8509
te Received	: 07/19/90	Dilution Factor	: 1.000
e Extracted/Prepared	: 07/23/90	Method	: 8020
e Analyzed	: 07/23/90	Matrix	: Soil
rcent Loss on Drying	: NA	Lab File No.	: PID5626
thanol extract?	: No	Method Blank No.	: MB07/23/90

mpound Name	Cas Number	Concentration ug/Kg		PQL* ug/Kg
zene	71-43-2		U	4
luene	108-88-3		U	4
yl Benzene	100-41-4		U	4
tal Xylenes	1330-20-7		U	---

rogate Recoveries;
a,a-Trifluorotoluene 63%

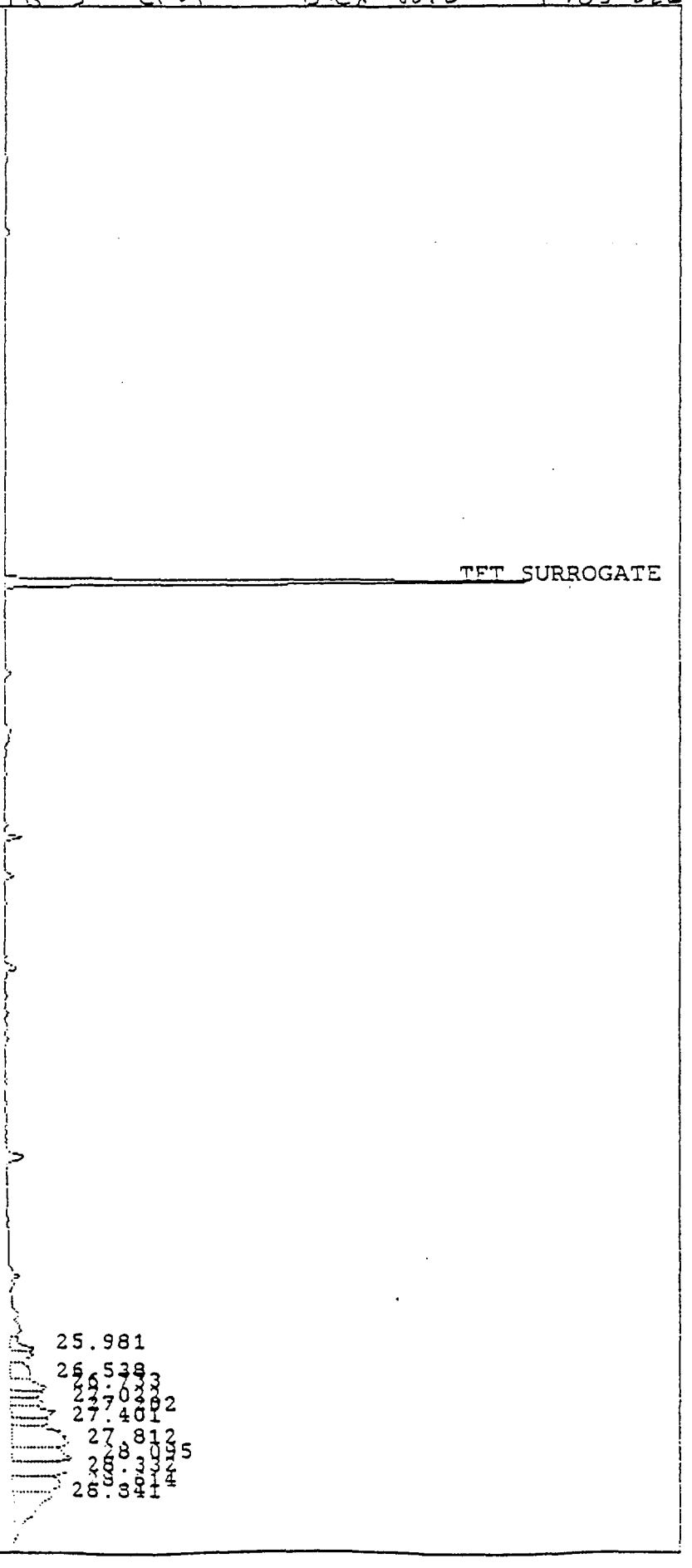
ALIFIERS:
= Compound analyzed for, but not detected.
= Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
= Compound found in blank and sample. Compare blank and sample data.
= The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
= Not applicable or not available.

proved: D. Blasczl

V Klephens
Quality Assurance Officer

forms\btex.pln

24 X23830 TB-3 df:1 BTEX 8020 PID5 626



EVERGREEN ANALYTICAL, INC.
4036 Youngfield St. Wheat Ridge, CO 80033
(303)425-6021
BTEX Data Report
Method Blank Report

thod Blank Number	: MB07/23/90	Client Project No.	: 11423
te Extracted/Prepared	: 07/23/90	Lab Project No.	: 8509
te Analyzed	: 07/23/90	Dilution Factor	: 1.000
		Method	: 8020
		Matrix	: Water
		Lab File No.	: PID5612

mpound Name	Cas Number	Concentration ug/L		PQL* ug/L
nzene	71-43-2		U	4
luene	108-88-3		U	4
hl Benzene	100-41-4		U	4
tal Xylenes	1330-20-7		U	---

rogate Recoveries;
a,a-Trifluorotoluene 105%

ALIFIERS:
= Compound analyzed for, but not detected.
= Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
= Compound found in blank and sample. Compare blank and sample data.
= The Practical Quantitation Limit is equal to the dilution factor multiplied by ten times the Method Detection Limit as determined by EPA SW846, Vol. 1B, Part II, pa. 8000-14.
= Not applicable or not available.

proved: D Blascall

V Stephens
Quality Assurance Officer

forms\btex.pln

4 MB 07/23/90 BLANK BTEX 8020 PIDS612
07/23/90

TFT SURROGATE

ATTACHMENT 7

Laboratory Results

EVERGREEN ANALYTICAL, INC.
4036 Youngfield Street Wheat Ridge, CO 80033
(303) 425-6021

COMPANY Hydro-Trial Ltd CONTACT Jerry Knudsen

ADDRESS 7310 Wadsworth Blvd, Ste 100 PROJECT #/NAME National Western Stock Show
Lakewood, Co 80215 P.O. #

PHONE # 238-6022 FAX # 238-6382 FAX RESULTS Y / N TURNAROUND REQUIRED * 5 days (+25%)

* AN EXPEDITED TURNAROUND MAY BE SUBJECT TO ADDITIONAL FEES

CHAIN-OF-CUSTODY RECORD

SAMPLERS SIGNATURE Jerry Knudsen

Sta.No.	Date	Time	Station Location	No. of Containers	Analysis Required										REMARKS
							Toxaphene	Camphor							
1	7/19/90	10:15Am	Cattle Spray Area	1			X	X							Soil Sample

Relinquished by: (signature) Jerry Knudsen Date/Time 7/19/90 11:30Am Rec'd by [illegible] 7/19/90 11:30A

Relinquished by: (signature) _____ Date/Time _____ Rec'd by: _____

Evergreen Analytical, Inc.

4036 Youngfield Street
Wheat Ridge, CO 80033-3865
(303) 425-6021
FAX (303) 425-6854

AUG 0 2 90

July 26, 1990

Mr. Jerry Knudsen
Hydro-Triad, Ltd
1310 Wadsworth Blvd, Ste 100
Lakewood, CO 80215

Data Report : 90-07-3127-8504
Client Project : Nat'l Western Stock Show

Dear Mr. Knudsen:

Enclosed are the analytical results for the samples shown in the Sample Log Sheet. Also enclosed is an invoice for this work. If you have any questions concerning the reported information, please contact Carl Smits or me.

The samples marked for return on the Sample Log Sheet will be returned one week from the date of this letter. Two (2) weeks from the date of this report, samples not marked for return will be disposed of by us and samples placed on "hold" but not analyzed will be returned.

Thank you again for using the services of Evergreen Analytical.

Sincerely,

John H. Barney
President

HYDRO-TRIAD, LTD.
GL
JH
JM
MN
GK

ISH

EVERGREEN ANALYTICAL, INC.
4036 Youngfield Wheat Ridge, CO 80033
(303)425-6021

SAMPLE LOG SHEET

Client HYDRO - TRIAD, LTD
Address 1310 WADSWORTH BLVD STE 100
LAKEWOOD, CO 80215
Contact JERRY KNUDJEN
Sampled 7/19/90 COC Received 7/19/90 11:30
Report Due 7/26/90 Holding Time 8/2/90
Client Project # NATIONAL WESTERN STOCK SHOW
Client P.O. #
Phone # 238-6022 Fax # 238-6382
Shipping Charges —
Special Instructions

Project # 8504
Airbill # HAND DELIVERED
Custody Seal present? YES
intact? YES
COC present? YES
Sample Tags present? YES
Sample Tags # listed? YES
Custodian, Date C.A. Cook 7/19/90
Fax Results? NOT SPECIFIED

Lab ID #	Client ID #	Analysis	Mtx	Btl	Loc	File #/Date	R*
23812	1-STOCKSHOW	TOXAPHENE (8080), COUMOPHOS (8140)	S	8oz w.m	1		
X23813 A/B	TRIP BLANK	HOLD	W	40mL VIAL	4		

*Samples to be returned

EVERGREEN ANALYTICAL, INC.
4036 YOUNGFIELD WHEAT RIDGE, CO 80033
(303)425-6021

COUMAPHOS ANALYSIS REPORT

Client: Hydro-Triad
Client Project No.: Stock Show
Laboratory Project No.: 8504
Date of Report: 7/26/90

Samples Rec'd: 7/19/90
Method: 8140
Matrix: Soil

Evergreen Sample #	Client Sample #	Surrogate Recovery	Coumaphos ug/Kg	PQL ug/Kg
SB072090	Blank	90%	U	500
x23812	1-Stock Show	73%	U	500

QUALIFIERS

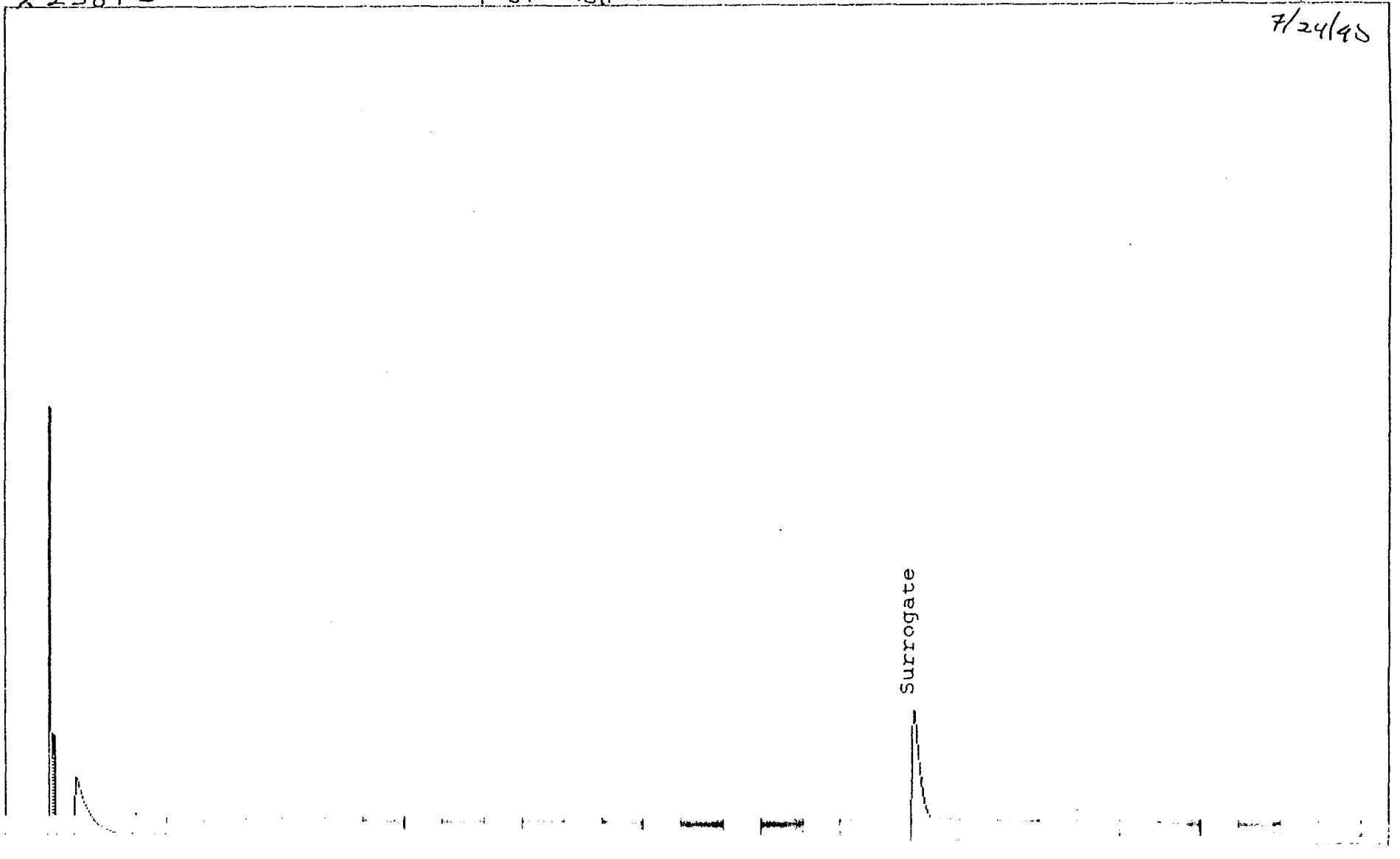
U = analyzed for but not detected.
J = estimated value below PQL
B = found in blank as well as sample (blank data should be compared).
*=PQL practical quantitation level for this method.

Approved _____ QAO _____

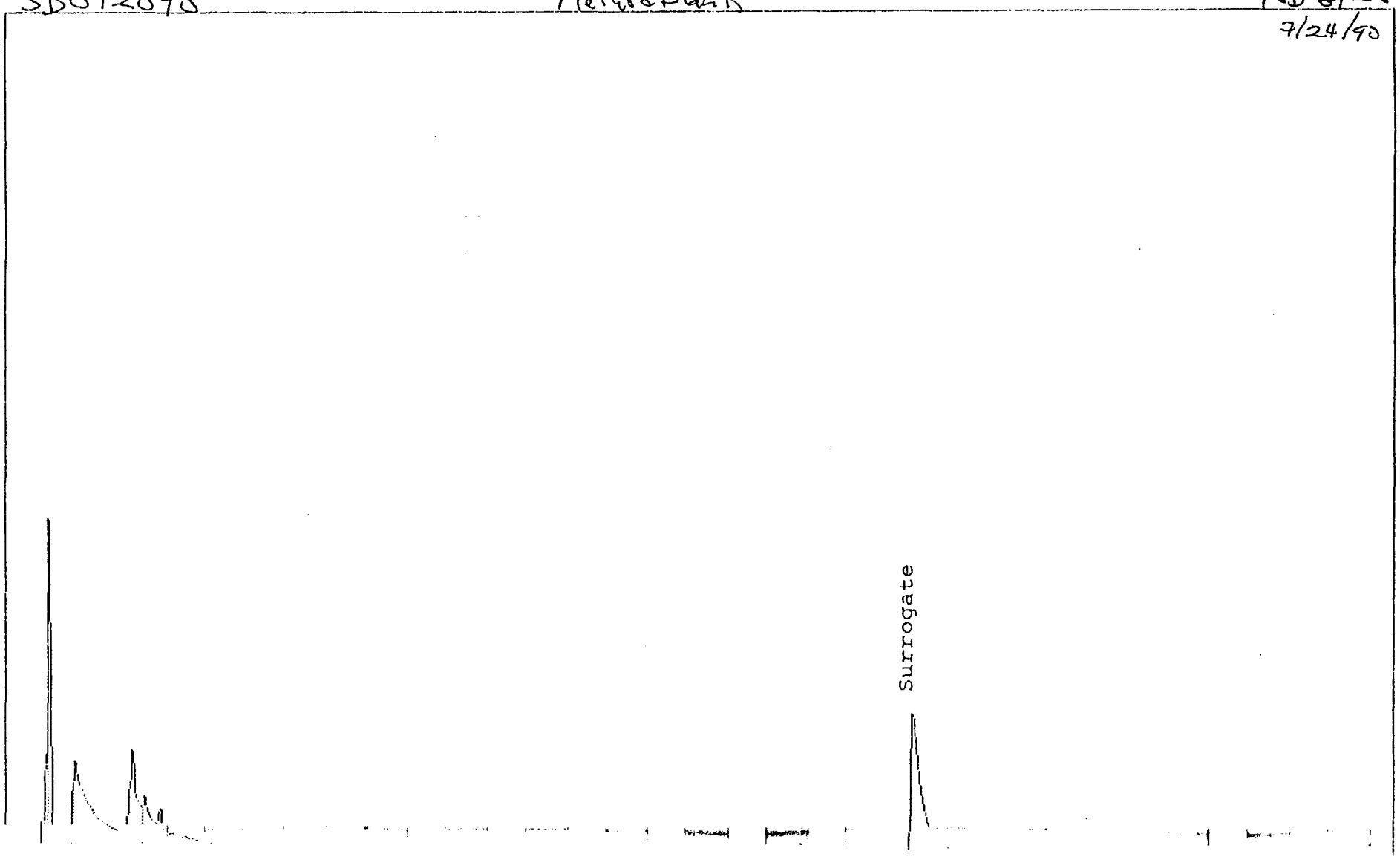
Coumaphos8504.FMT::DATA

X23812 1-STOCKSHOW TSD6727

7/24/95

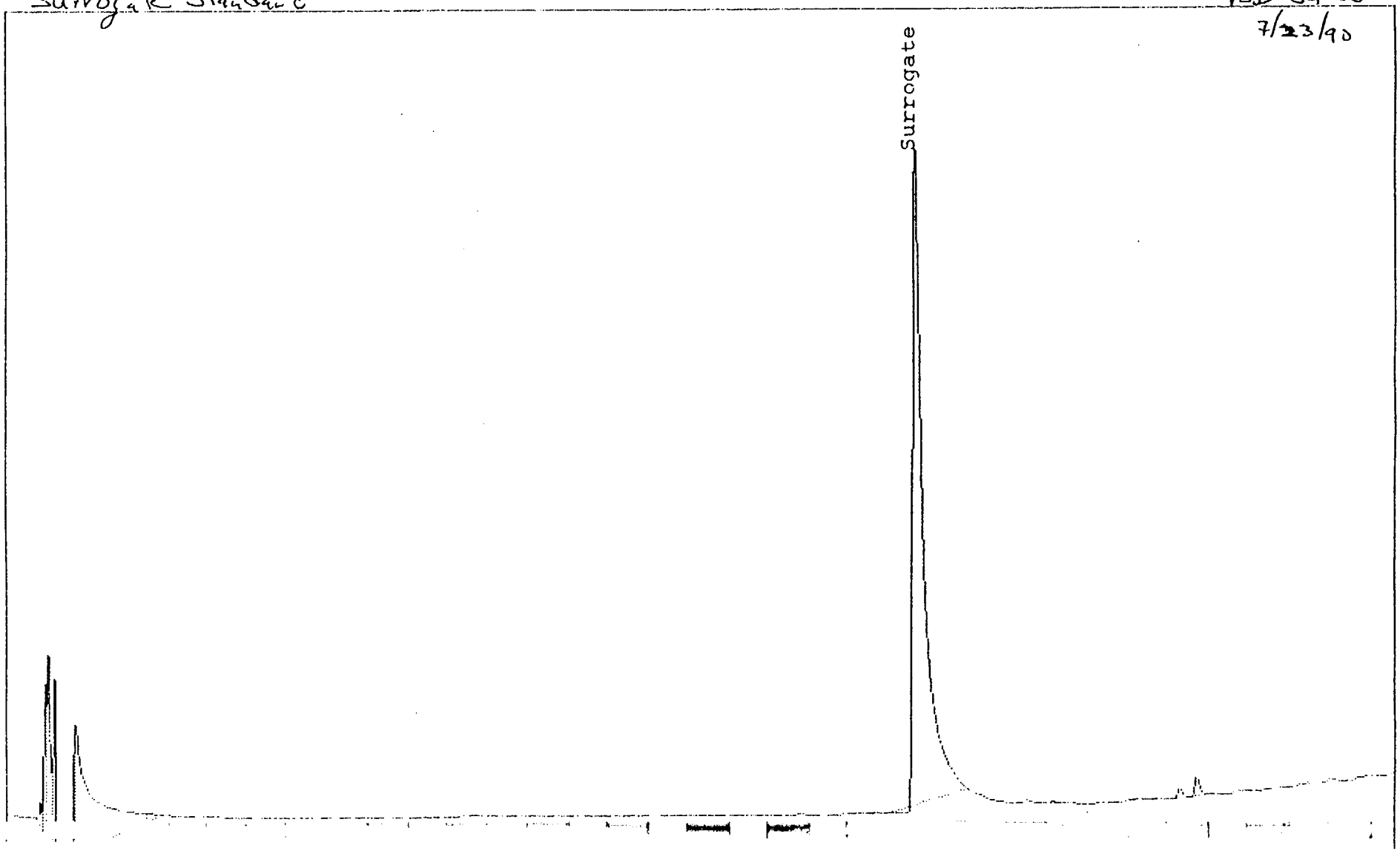


SB072090 Method Blank TSD 6726
7/24/90



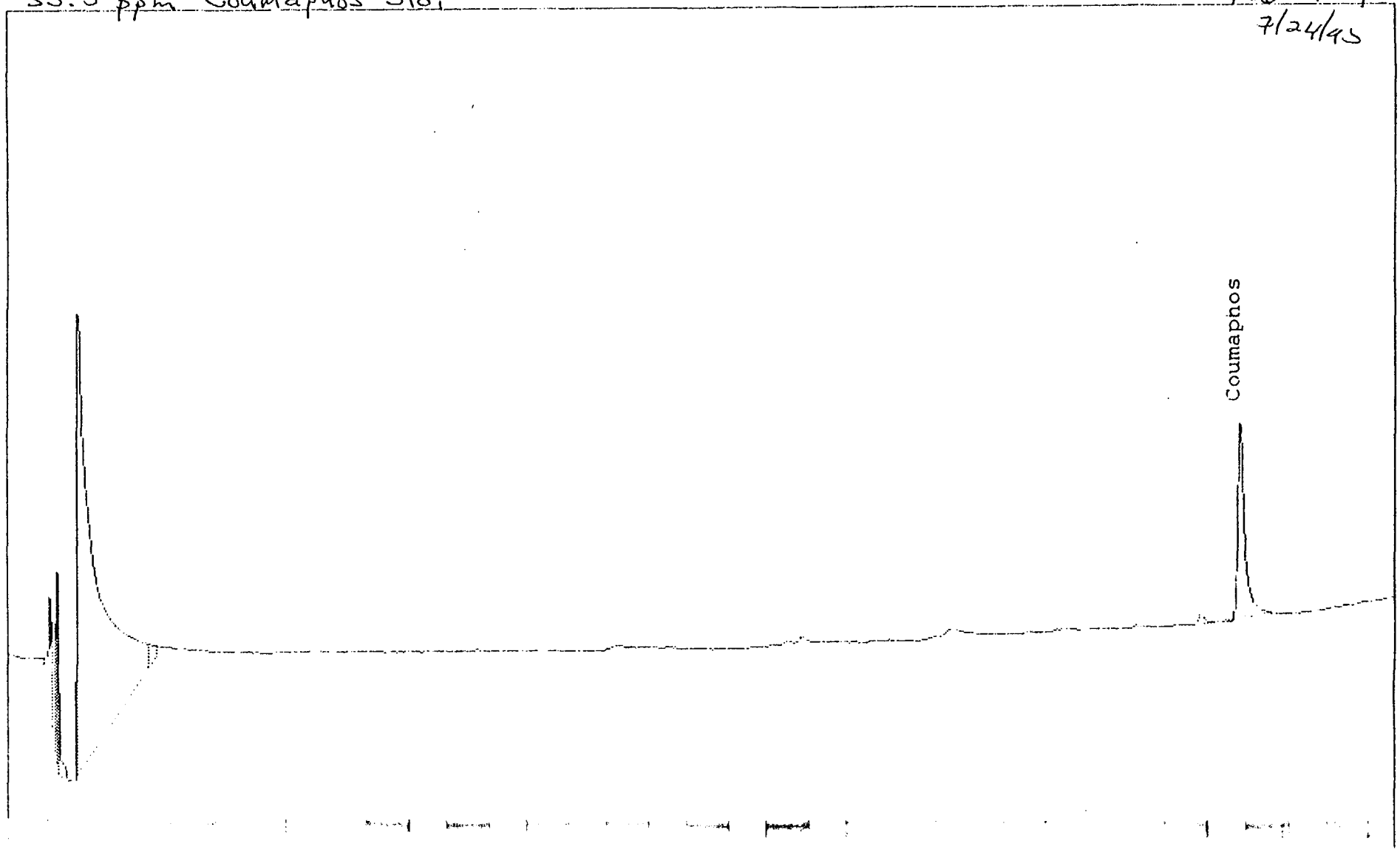
Surrogate Standard

TSD 6720
7/23/90



33.3 ppm Coumaphos Std.

TSD 6729
7/24/45



EVERGREEN ANALYTICAL, INC.
4036 Youngfied Wheat Ridge CO 80033
(303)425-6021

Pesticide Data Report

.ient Sample #	: 1 (CATTLE SPRAY AREA)		
ıb Sample #	: X23812	Client Project #	: NAT.WEST.STK.SH
ı e Sampled	: 07/19/90	Lab Project #	: 8504
ıse Received	: 07/19/90	Dilution Factor	: 1.013
ıte Extracted/Prepared	: 07/30/90	Method	: 8080
ı e Analyzed	: 07/31/90	Matrix	: Soil
ı cent Loss on Drying	: 1.46	Lab File No.	: ECD1623
ɛvel	: LOW	Method Blank No.	: SB07/30/90
I-	: 8		

ɔmpound Name	Cas Number	Concentration ug/Kg	PQL* ug/Kg
ɔ ɜaphene	8001-35-2	890	160

urrogate Recovery;
i-utylchlorendate 143%

UALIFIERS:
= Compound analyzed for, but not detected.
= Indicates an estimated value when the compound is detected, but is
below the CLP Practical Quantitation Limit (PQL).
= Compound found in blank and sample. Compare blank and sample data.
= Indicates the Practical Quantitation Limit (PQL).
A = Not applicable or not available.

pproved: William R. Snyder

Quality Assurance Officer

EVERGREEN ANALYTICAL, INC.
4036 Youngfied Wheat Ridge CO 80033
(303)425-6021
Pesticide Data Report
Method Blank Report

ethod Blank Number	: SB07/30/90	Client Project No.	: NAT.WEST.STK.SH
te Extracted/Prepared	: 07/30/90	Lab Project No.	: 8504
ate Analyzed	: 07/31/90	Dilution Factor	: 1.000
		Method	: 8080
		Matrix	: Soil
		Lab File No.	: ECD1620

ompound Name	Cas Number	Concentration ug/Kg	PQL* ug/Kg
xaphene	8001-35-2	U	160

urrogate Recovery;
tetrachlorendate 121%

QUALIFIERS:
U = Compound analyzed for, but not detected.
J = Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
B = Compound found in blank and sample. Compare blank and sample data.
* = Indicates the Practical Quantitation Limit (PQL).
N = Not applicable or not available.

Approved: William L Snyder

Quality Assurance Officer

SB 07/30/90 Method Blank ECD 1620 7/31/90

7.134

TBUTYLCHLORENDATE

Evergreen Analytical, Inc.

4036 Youngfield Street
Wheat Ridge, CO 80033-3862
(303) 425-6021
FAX (303) 425-6854

August 8, 1990

Mr. Jerry Knudsen
Hydro-Triad, Ltd
1310 Wadsworth Blvd, Ste 100
Lakewood, CO 80215

Data Report : 90-08-3253-8650
Client Project : Nat'l Western Stock Show

Dear Mr. Knudsen:

Enclosed are the analytical results for the samples shown in the Sample Log Sheet. Also enclosed is an invoice for this work. If you have any questions concerning the reported information, please contact Carl Smits or me.

The samples marked for return on the Sample Log Sheet will be returned one week from the date of this letter. Two weeks from the date of this report, samples not marked for return will be disposed of by us and samples placed on "hold" not analyzed will be returned.

Thank you again for using the services of Evergreen Analytical.

Sincerely,

John H. Barney
President

HYDRO-TRIAD, LTD.

AUG 0 9 90

RL		GL	
DSA		JH	
CCB		JM	
MLJ			
SRW		MN	
SR		GK	

File _____

Comments _____

JSH

EVERGREEN ANALYTICAL, INC.
4036 Youngfield Wheat Ridge, CO 80033
(303)425-6021

SAMPLE LOG SHEET

Client HYDRO-TRIAD, LTD
Address 1310 WADSWORTH BLVD STE 100
LAKEWOOD, CO 80215
Contact JERRY KNUDSEN
Sampled 7/19/90 COC Received 7/19/90
Report Due 8/8/90 Holding Time 8/2/90
Client Project # NAT'L WESTERN STOCK SHOW
Client P.O. #
Phone # 238-6022 Fax # 238-6382
Shipping Charges
Special Instructions SAMPLE FROM 8504 ; ANALYSIS PER SHEA

Project # 8650
Airbill # HAND DELIVERED
Custody Seal present? YES ON BO intact? —
COC present? YES ON PROJ 8504
Sample Tags present? YES
Sample Tags # listed? YES
Custodian, Date [signature] 8/1/90
Fax Results? NOT SPECIFIED

Lab ID #	Client ID #	Analysis	Mtx	Btl	Loc	File #/Date	R*
24613	1-STOCKSHOW	EPTOX TOXAPHENE	S	8oz W.M	1	"	

Samples to be returned

EVERGREEN ANALYTICAL, INC.
4036 Youngfied Wheat Ridge CO 80033
(303)425-6021

Pesticide Data Report

lient Sample #	: 1-STOCKSHOW		
-b Sample #	: X24613	Client Project #	: NAT.WEST.STK.SH
te Sampled	: 07/19/90	Lab Project #	: 8650
ate Received	: 07/19/90	Dilution Factor	: 5.000
ate Extracted/Prepared	: 08/06/90	Method	: 8080
te Analyzed	: 08/07/90	Matrix	: EP TOX LEACHATE
rcent Loss on Drying	: NA	Lab File No.	: ECD1773
evel	: LOW	Method Blank No.	: WB08/06/90
	: 5		

ompound Name	Cas Number	Concentration ug/L		PQL* ug/L
oxaphene	8001-35-2		U	5

rrogate Recovery;
ibutylchlorendate 117%

LIFIERS:
= Compound analyzed for, but not detected.
= Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
= Compound found in blank and sample. Compare blank and sample data.
= Indicates the Practical Quantitation Limit (PQL).
= Not applicable or not available.

pproved: William R. Snyder

Quality Assurance Officer

EPTox leachate

X24613 1-Stockshow ECD 1773

5.110
5.434
5.833
5.928
6.329
6.618
6.831
7.222
7.694
8.335
8.636
9.015
9.364
9.715
9.931
10.380
10.690
11.039
11.496
11.822
12.301
12.665
13.158
13.480
13.742
14.443
14.782
15.380
15.772
17.472
18.503
18.870
19.456
20.232
21.067
22.419
22.834
23.632
24.198
24.535
DIBUTYLCHLORENDATE
25.302
25.617
25.937
26.186
26.513
28.114
28.464
29.825

EVERGREEN ANALYTICAL, INC.
4036 Youngfied Wheat Ridge CO 80033
(303)425-6021
Pesticide Data Report
Method Blank Report

ethod Blank Number	: WB08/06/90	Client Project No.	: NAT.WEST.STK.SH
te Extracted/Prepared	: 08/06/90	Lab Project No.	: 8650
ate Analyzed	: 08/07/90	Dilution Factor	: 1.000
		Method	: 8080
		Matrix	: WATER
		Lab File No.	: ECD1772

ompound Name	Cas Number	Concentration ug/L	PQL* ug/L
xaphene	8001-35-2	U	1

rogate Recovery;
ibutylchlorendate 108%

LIFIERS:
= Compound analyzed for, but not detected.
= Indicates an estimated value when the compound is detected, but is below the CLP Practical Quantitation Limit (PQL).
= Compound found in blank and sample. Compare blank and sample data.
= Indicates the Practical Quantitation Limit (PQL).
= Not applicable or not available.

pproved: William R. Snyder

Quality Assurance Officer

115 08/06/90 Method Blank ECD 1772 8/7/90

7.547

5.256

IBUTYLCHLORENDATE

K23812 1 (Cattle Spray Area) ECD 1623 7/31/90

10.456
0.704
11.168
11.411
1.757
1.934
12.263
12.576
1.933
1.123
13.390
13.664
13.903
1.110
1.311
14.722
1.306
15.630
15.954
16.107
1.323
1.783
1.943
19.083
17.564
1.307

TOXAPHENE

24.042
24.174
DIBUTYLCHLORENDATE
25.170
25.416
25.693
26.114
26.341
26.619
27.226
28.080
28.466
29.345
29.587